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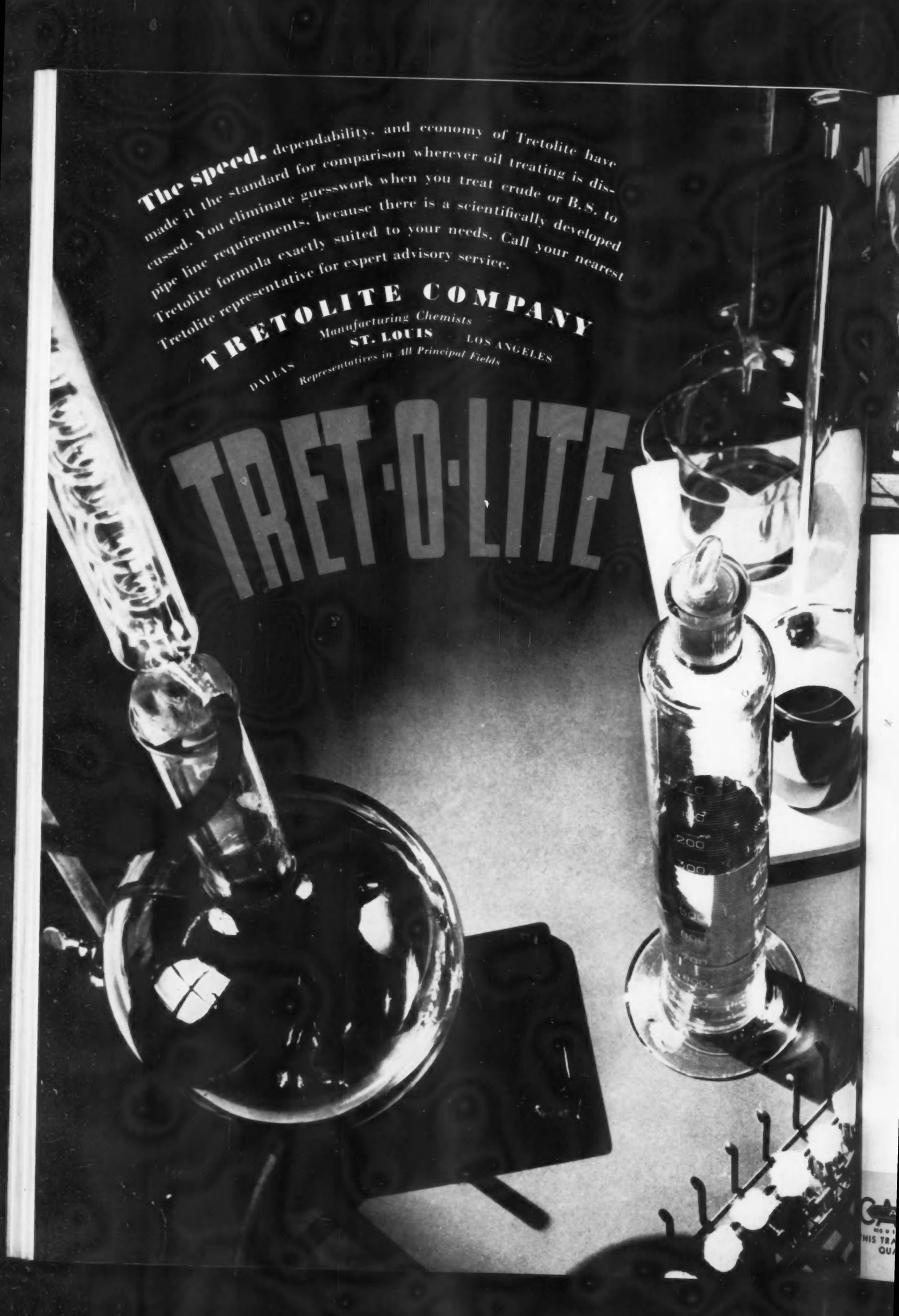
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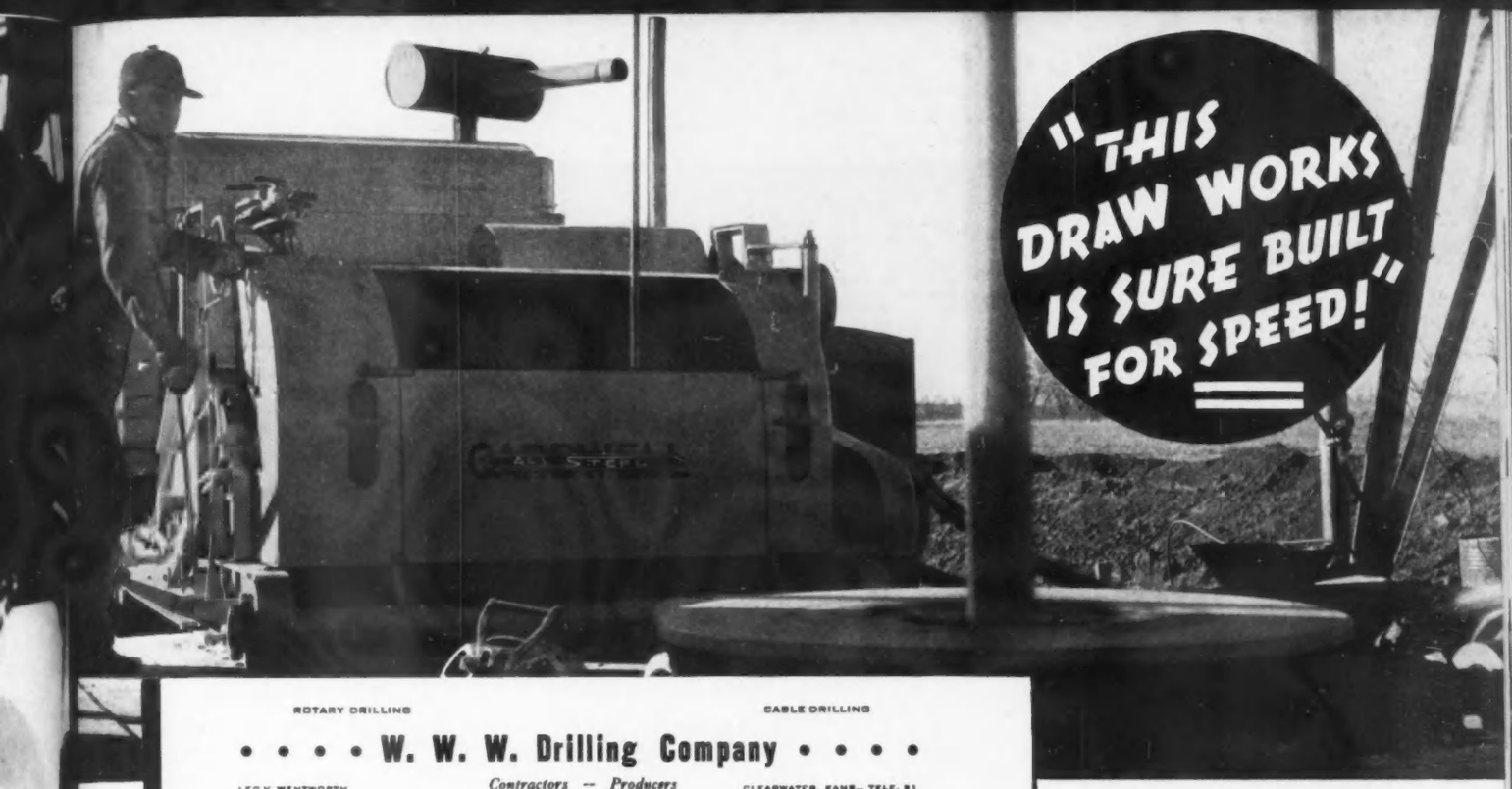

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P.O. Drawer 2001
Wichita, Kansas

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We know you will be interested in the performance of our "Cardwell" Model L draw works.

On December 16th, we rigged up this draw works and drilled a 14-3/4" hole for surface pipe and set 197 feet of 10-3/4" pipe. We waited for cement to set and started drilling operations again on December 19th, drilling a 9" hole to a depth of 3,309 feet and ran 5½" OD drill string. The well was completed to this depth and cemented January 1st. The time required in drilling this well was a very good average for the Silica Field.

The "Hi-Lo" drive used in connection with the hydraulic transmission really operates like a steam engine. We used the high speed drive side only to an approximate depth of 1,900 feet. Taking into consideration that the draw works was powered with a 148 HP Waukesha engine and we were using 4½" drill pipe, this rig was more than satisfactory. Beyond 1,900 feet, we used the low speed drive in picking up the drill pipe off the slips and the high speed side for taking up the empty block. We might say here that the high speed of the empty block going up in the derrick was plenty fast; in fact, care had to be taken not to put it past the derrick man.

The friction clutches of the high and low speed drive engage the load smoothly and add greatly to the drilling speed.

Needless to say, we are well pleased with the draw works.

Yours very truly,

Leo V. Wentworth

Leo V. Wentworth
W.W.W. Drilling Company

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- SMOOTH, FLEXIBLE POWER
- STEAM RIG PERFORMANCE
- SPEED AND POWER SATISFIES
- DOUBLE QUICK "RUN-UP"
- FRICTION CLUTCH OPERATED
- NO SHOCK-LOAD
- FAST DRILLING SPEED

● The two-speed friction clutch drive to the drum, rotary table drive friction clutch, countershaft brake and automatic rotary table brake are hydraulically controlled.

No gears to shift with the hydraulic transmission; the engine throttle controls the entire range of power to the draw works.

The new dual safety brakes will operate independently and hold the full capacity load should one brake fail.

Model L draw works is recommended for rotary drilling to 3,500 feet with 4½" drill pipe or to 4,500 feet with 3½" drill pipe and for workover jobs to 8,000 feet, using 2½" tubing.

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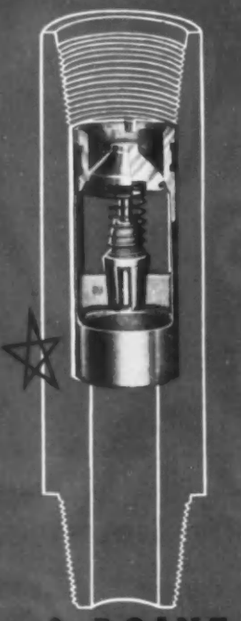
Operators like the long life and positive protection afforded by these BAKWIK Drill Pipe Floats.

For Complete Details See Pages 267-269 of the 1940 Composite Catalog.



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GAS-LIFT PRINCIPLES AND PRACTICES

By S. F. SHAW, E. M.
Consulting Engineer

This book is largely based on a series of lectures on gas lift delivered before the Petroleum Engineering Department of the Agricultural and Mechanical College of Texas on November 9th and 10th, 1939, by the author as special lecturer of the Department of Petroleum Engineering.

A history of the development of the air-gas lift is given, covering operations in air and gas-lift, and noting some of the inventions that have been patented in connection with this work.

The performance data in the numerous tables are selected from some 15,000 actual field tests made to determine the best rates at which to produce a well, these tests being made by the author or under his supervision, in many fields of the United States and foreign countries.

The principles controlling operation of the gas-lift are discussed, curves and formulas are given for determining the quantity of gas required to lift liquids, and curves and formulas are given for determining the capacity of various sizes of pipes in certain fields, and methods are discussed for determining similar formulas and curves in new oil fields.

A lengthy discussion of the selection of compressors and building of plants suitable for handling gas-lift operations is given.

CONTENTS:

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Looking Ahead

WITH THE EDITOR

ASSOCIATION MEETINGS are the order of the day at this season and a casual survey of the engineering subjects that are getting attention is convincing evidence of the marvelous progress of the industry and the importance of these technical gatherings. It is not possible for everyone niterested to attend all of the numerous meetings but the proceedings and the more outstanding discussions are made available for permanent reference through the editorial pages of THE OIL WEEKLY.

SALT-WATER DISPOSAL is an ever-present problem in most fields, but it assumes serious proportions in an area as large as East Texas. It might be said that the East Texas field today is the testing ground for salt-water-disposal methods and the new technique of injecting salt water back into sub-surface formations is gaining considerable headway. A symposium discussion of the various projects under experiment provides an interesting series of articles proposed for early publication.

GERMANY'S OIL SUPPLY and her war requirements are subjects of popular conjecture but thus far no one has been able to definitely project when and if a shortage of petroleum products will become serious. It is known that the high command of the German army has done an excellent job of influencing the Reich to stimulate the production of petroleum substitutes and these together with available crude oil are expected to provide a total supply of 8,079,000 tons during 1940. An analysis of these figures is the basis for an article to be published in THE OIL WEEKLY next week.

PICTORIAL PHOTOGRAPHY has become established as a potent medium for the interpretation and presentation of modern life and is rapidly finding a place in industrial proficiency. Many oil men and equipment manufacturers will be attracted to the proposed Petroleum Industry Photographic Salon announced for the annual meeting of the API in Chicago next November. In the meantime readers of THE OIL WEEKLY will observe a greatly increased use of photographs in editorial presentations and frequent pictorial features will trace the development of particularly interesting operations.

The OIL WEEKLY. Published every Monday. Entered as second-class mail matter December 23, 1916, at the post office at Houston, Texas under act of March 3, 1879.

THE OIL WEEKLY

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The Oil Man's Calendar

APR. 16–18	Southwestern Gas Measurement Short Course, Norman, Okla.
18–19	National Petroleum Association, Semi-Annual Meeting, Cleveland, Ohio.
26–27	Petroleum & Natural Gas Conference, State College, Pa.
MAY 1– 3	Petroleum Industry Electrical Association, Dallas, Texas.
6–10	American Gas Association, Natural Gas Section, Houston.
15–17	Natural Gasoline Association of America, Tulsa.
18–25	International Petroleum Exposition & Congress, Tulsa.
27–31	American Petroleum Institute, Mid-Year Meeting, Ft. Worth, Texas.
30–31 June 1	National Oil Scouts and Land Man's Association, Hot Springs, Ark.
JUNE 1	Illinois-Indiana Petroleum Association, Robinson, Ill.
SEPT. 9–13	American Chemical Society, Detroit.
18–20	National Petroleum Association, Atlantic City, N. J.
OCT. 7–11	National Safety Congress and Exposition, Chicago.
31	Texas Mid-Continent Oil & Gas Association, Ft. Worth.

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QUIT WORRYING!

PUT A LARKIN SPIDER ON THE JOB ...IT'LL HOLD 3 MILES OF CASING!

AT 5200 FEET Fred started worrying. "There's a mile of casing to go in that hole," he says. "When I think of what will happen if it ever gets away from us . . ."

"QUIT WORRYING" I tell him. "There's your answer right under your nose! Put a Larkin Spider on the job! The Larkin Salesman showed me yesterday how a 9 5/8" OD Larkin Split Spider can hold better than 3 1/4 miles of 40 pound casing — that's over 350 tons — and without distortion!"

The Larkin Split-Type Spider

The Larkin Solid Spider

LARKIN SPIDERS are easy to handle. They're labor savers, and trouble proof, too. On many jobs they're taking the place of casing clamps. Forged steel slips working in the correct taper hold the casing with teeth that stay sharp. The slips are so tough there isn't a grade of pipe can phase them.

WHAT'S MORE the slips are plenty long so they can't pinch pipe or freeze in the taper. For permanent installations the Larkin Solid Spider is best; the Split-type is extremely handy for either temporary or permanent work. Whichever you specify you'll get a spider that'll *hold!*

IT PAYS TO BUY instead of renting one. For *extra* economy, specify several sizes of extra slips when you order. Larkin Spiders are so strong, so dependable, so low in initial cost, so high in salvage value you will quickly agree with the hundreds of operators who say; *"It pays to get a Larkin Spider!"*

THE NEW 1940 LARKIN CATALOG tells all about Larkin Spiders. See page 1383 of the 1940 Composite Catalog.

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THE OIL WEEKLY

APRIL 15, 1940

VOLUME 97 NUMBER 6

The Week's Panorama

BOTH sales and profits of many concerns, including numerous oil companies, have been better in the opening months of 1940 than in the corresponding months of 1939.

Better results have been due to larger volumes of business and better prices.

Decline Arrested . . . . .

Business analysts and economists are fairly well agreed that the minor recession of the past three months has been arrested and that the trend for the next few months will be sidewise. Those holding this opinion include economists of the Department of Commerce, the Bureau of Agricultural Economists, and the Federal Reserve Board.

After a few months, it is believed, a turn either up or down will occur, although few are willing to predict which way.

Up or Down? . . . . . .

It is stated that large inventories will be viewed with increasing uneasiness if an upturn does not materialize within a relatively short period, and that a liquidation of inventories would tend to precipitate another decline.

To assure a turn upward, it is felt, some definitely stimulating influence may be needed. The needed push might be supplied by such developments as renewed large government spending or sharply increased capital expenditures by business. But possibly a more likely stimulant would be the development of a more violent war in Europe, which would enlarge demand for United States goods.

Demand Outlook . . . . .

Although the domestic demand for gasoline is expected to be 5 to 6 percent greater in 1940 than in 1939, it is calculated that total demand may be up only about 3 percent, because of probable low exports.

Gains in demand for petroleum products, as compared with requirements in 1939, were remarkably large for the first quarter of 1940. But it is believed that increases for the remainder of the year will be smaller.

Refinery Yields . . . . . .

The industry is being urged to begin taking precautions now against a scarcity of heating oil next fall. The course suggested is to step up yields of the light fuel oils while at the same time holding down yields of gasoline, stocks of which are excessive. Plants are sufficiently flexible for such regulation of yields, it is asserted.

The present over-supply of gasoline is considered largely an outgrowth of the scarcity of heating oil last fall, and there is danger of a repetition next fall and winter of the past experience of having to overproduce gasoline to provide enough heating oil.

English oil substitutes . . .

Experts in England have made a survey on possibilities of substituting home-produced materials for imported petroleum, and have shown that production of tar, creosote, and pitch can replace imported oils to the extent of 300,000 tons (about 2,000,000 barrels) during 1940. Crude benzol already is being recovered at the rate of 15,000,000 gallons (about 350,000 barrels) annually, and it is considered feasible to increase the production an additional 12,000,000 gallons (about 300,000 barrels).

Stricter Crude Control . . .

Stricter control of crude oil production is promised for May, following large excesses in March and April, which have caused accumulation of some millions of barrels in storage. Texas has been the outstanding over-producer, but officials of that state have stated that allowables will be made to conform with indicated market demand in May, June, and July.

Japanese Oil Buying . . .

The California division of the oil industry may be materially affected by the attitude of Congress toward trade relations with Japan in the future.

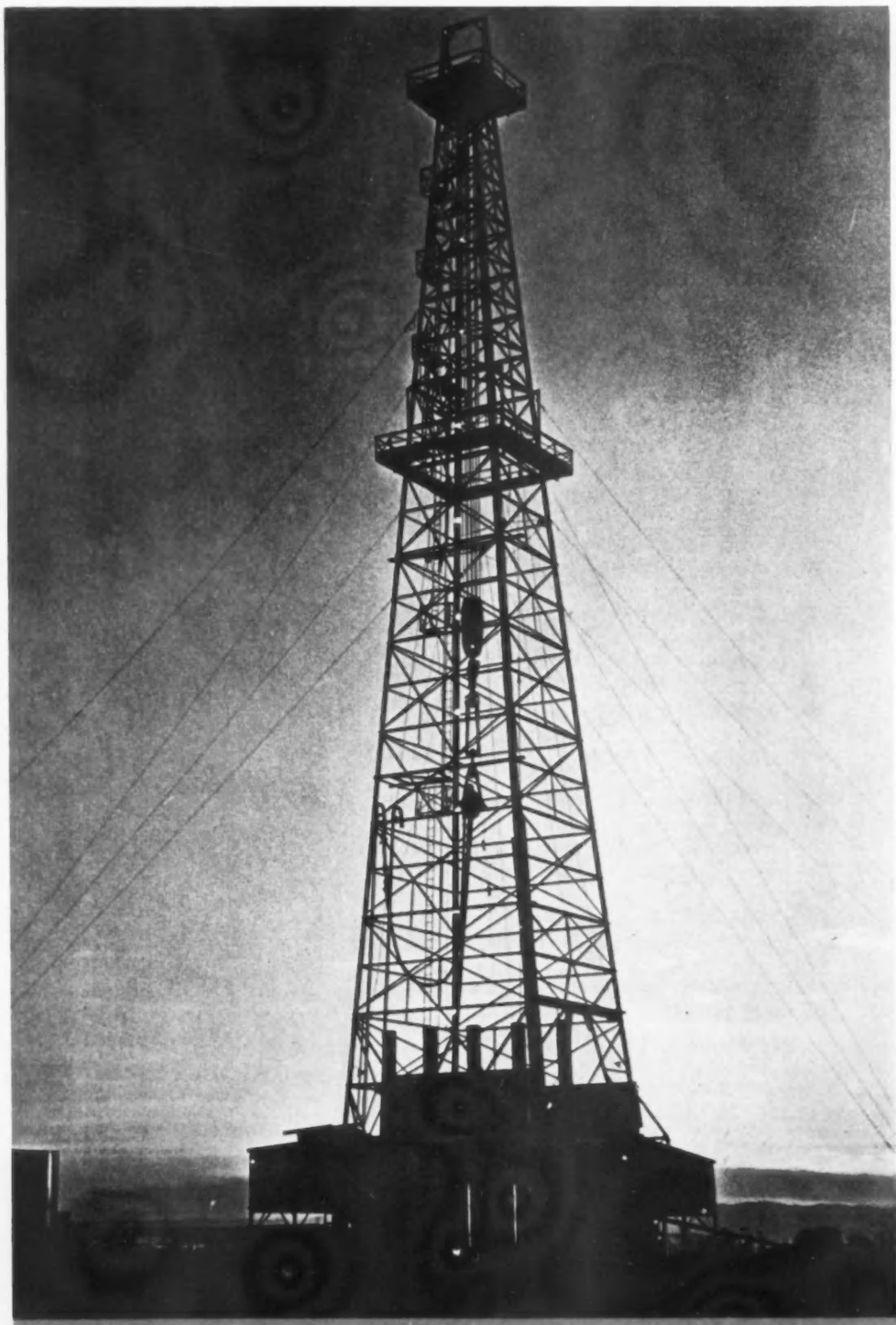
Japan has become one of the most important purchasers of United States crude oil and petroleum products, particularly since outbreak of the Sino-Japanese war. And the exports to Japan have contributed greatly toward maintaining stability in California's oil industry.

Following expiration January 26 of the trade agreement of the United States with Japan, that country no longer has certain advantages formerly held in purchasing American oils. And it is not known whether Japan consequently will sharply curtail purchases.

Although an embargo on oil shipments to Japan has been advocated in some quarters, such action obviously would create a serious problem for the oil companies of California.

Air Travel Gaining . . . .

It is predicted that the air lines of the United States will be carrying over 4,000,000 passengers annually by 1942, or twice as many as in 1939. More extensive flying routes and lower fares will stimulate air travel.



Larger Investment but Lower Drilling Costs

CALIFORNIA'S answer to deeper drilling is the above rig which is credited with employing the largest equipment ever assembled for drilling an oil well. Despite that it represents a capital investment close to a half-million dollars, this equipment is pointing the way to a substantial savings in drilling costs. The rig has been designed for use by Superior Oil Company in the Rio Bravo field where production horizons are below 11,000 feet. Earlier wells in the field have cost in the neighborhood of $180,000 each to complete, whereas with heavier equipment wells are being drilled today for around $100,000. It is believed that the above rig, using 4-inch drill pipe, will be able to satisfactorily attain depths ranging from 15,500 to 16,000 feet and with 3-inch drill pipe it should be capable of drilling considerably greater depths. However, the purpose of the rig is not to drill record depths but to lower cost of reaching levels now known productive.

Increased Profits Ahead If Surpluses Are Checked

By L. J. LOGAN, Associate Editor

LIKE most other lines, the oil industry operated more profitably in the first quarter of 1940 than in the similar period of 1939. And like business in general, it has prospects of continued earnings above last year's levels for the second quarter, although the outlook has become increasingly uncertain because of the extended decline of industrial and business activity and the difficulties within the oil industry, including particularly the large surplus of gasoline and the continued excessive crude production.

Industrial production has settled back down around the levels that prevailed before outbreak of the European war, and further recession might be expected to have a retarding effect on the domestic demand for petroleum products, while exports already have been curtailed by the war.

The market for gasoline has held up remarkably well in the face of the record-breaking stocks of that product, prices being somewhat better than at this time last year. However, the quotations are materially lower than they were last fall, and the outlook for the future trend of prices is not promising, some market analysts being of the opinion that further declines may occur.

Last year, the gasoline market improved as the year advanced, particularly in the summer and fall, prices having attained the highs of the year in October and November. But a similar trend is not promised for this year because of the decidedly less favorable inventory situation.

The present gasoline stocks of over 100,000,000 barrels, greatest in the history of the industry, embody an indicated surplus of about 20,000,000 barrels and are approximately 15,000,000 barrels larger than the over-supply of a year ago.

The gain in stocks over last year has been only partially justified by the increase in demand for gasoline, which has amounted to about 5 percent. Exports have been running lower in 1940 than in 1939, but domestic demand has been materially better.

While the gain in demand over 1939 has not justified the expansion of stocks which has occurred, it has provided larger volumes of business and thereby has had a favorable effect on earnings.

Inventories of products other than gasoline are mostly moderate or even light in relation to prevailing demand, and the markets for those oils are generally firm at desirable price levels. Consequently, the favorable returns for lubricants, fuel oils, kerosene and other products tend to compensate for the comparatively small market value of gasoline.

In the aggregate, therefore, the derivatives from a barrel of crude oil yield the refiner a comparatively good return, and both the producing and refining divisions of the industry are in position to show relatively good profits on their operations.

Further weakening of the gasoline market, however, would cut materially into the total profits now available to the industry, inasmuch as gasoline is the principal product, representing about 45 percent of the yield from crude.

Moreover, any additional weakening of gasoline prices would endanger established crude price postings, as product prices ultimately must determine the value of the raw material from which they are made.

Until a few weeks ago the markets for crude were remarkably firm, with comparatively little oil selling for less than posted prices. But in March the situation turned less favorable, as production was increased materially above market requirements, with the result that substantial quantities of crude began backing up in storage. Illinois has continued to produce materially in excess of firm demand, current estimates being that around 75,000 barrels daily are being sold at discounts below the posted prices, such concessions ranging to as much as 25 cents a barrel. Inasmuch as Illinois has no proration, it is to be expected that the state will continue to overproduce until a natural decline occurs, although it is believed that the peak may be reached within a few months, unless more new fields or pay sands are found.

Texas materially overproduced in March, state authorities having deliberately liberalized allowables for the avowed purpose of "testing the market," to see how much Texas crude it would absorb. Substantial additions to crude stocks resulted, and the officials contemplated cutting back allowables for April, but when the April order was promulgated it authorized output about as much in excess of estimated demand as the March order had sanctioned.

Some of the other states of the Mid-Continent have followed the Texas example and in April will produce more than market demand as estimated by the Bureau of Mines.

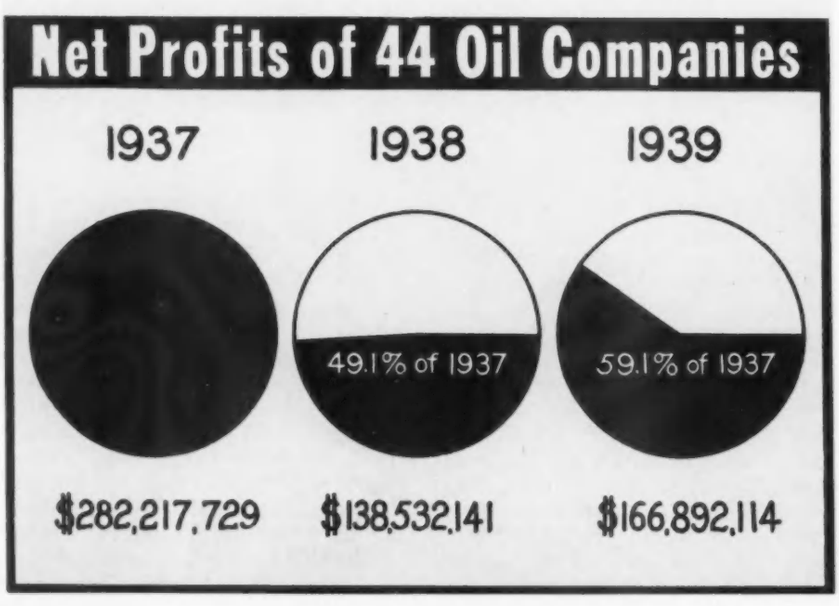
In 8 prorated states that account for 84 percent of all United States crude oil production, aggregate allowables for April are approximately 250,000 barrels a day, or 8.4 percent, in excess of the estimates of market demand; and some states commonly fail to stay quite within their allowables. Unprorated Illinois currently is producing around 75,000 barrels a day more than the Bureau of Mines estimate of market demand for Illinois crude in April. For the country as a whole, therefore, actual production in April is scheduled to run more than 325,000 barrels a

Net Income of 44 Oil Companies 20.5 Percent Greater in 1939 Than in 1938, 40.9 Percent Smaller Than in 1937

Net profits after all deductions, including interest, depreciation, depletion, amortization, federal taxes, minority interest, etc.

COMPANY	1937	1938	1939	Percent Change, 1938-1939
American Republics Corporation	$351,751	*$287,754	$186,861	.....
Argo Oil Corporation (Delaware)	391,388	391,388	59,068	— 85.0
Atlantic Refining Company	9,935,045	5,023,282	4,310,659	— 14.2
Barnsdall Oil Company	1,903,029	2,837,897	1,720,292	— 41.2
Barnsdall Refining Corporation (Now Bareco Oil Company)	*860,359	*1,432,519	*157,154	.....
Bishop Oil Company	320,481	46,481	309	— 97.5
Derby Oil & Refining Corporation	426,823	*164,358	*21,248	.....
Eureka Pipe Line Company	*5,849	*14,937	31,378	.....
Fohs Oil Company	1,476,458	777,684	215,342	— 72.4
Houston Oil Company of Texas and Houston Pipe Line Company	1,574,327	1,304,735	1,010,530	— 22.5
Lone Star Gas Company	6,820,788	5,304,104	5,402,871	+ 1.8
Margay Oil Corporation	489,043	342,416	228,352	— 33.3
Mid-Continent Petroleum Corporation	5,304,877	1,043,791	2,650,501	+ 153.5
Midwest Oil Company	944,545	931,623	990,281	+ 6.3
National Transit Company (Pipe Lines)	604,985	447,650	463,624	+ 3.6
Navarro Oil Company	†674,933	†579,947	†232,566	— 60.0
North Central Texas Oil Company, Incorporated	134,122	89,753	73,000	— 18.6
The Ohio Oil Company, Incorporated	11,862,107	4,582,964	1,492,086	— 67.5
Pacific Western Oil Corporation	1,388,710	1,217,378	813,689	— 33.5
Pan American Petroleum & Transport Company	5,539,384	363,275	5,188,825	+1330.0
Panhandle Producing & Refining Company	212,050	53,933	9,536	— 85.8
Phillips Petroleum Company	24,113,874	9,049,122	9,833,314	+ 8.7
Plymouth Oil Company	2,935,342	2,609,091	2,475,052	— 5.1
Pure Oil Company	11,403,805	5,412,903	8,290,418	+ 53.2
Quaker State Oil Refining Corporation	1,041,848	515,116	1,584,026	+ 208.
Reiter-Foster Oil Corporation	*36,796	*20,040	8,550	.....
Seaboard Oil Company	2,447,130	1,895,790	1,746,464	— 7.8
Shell Union Oil Corporation	20,668,880	11,318,423	11,805,712	+ 4.2
Skelly Oil Company	6,488,346	2,650,054	2,360,783	— 10.9
South Penn Oil Company	4,643,266	1,441,817	2,837,042	+ 96.6
Standard Oil Company of Indiana	55,950,784	27,771,976	34,142,642	+ 22.9
Standard Oil Company of Kansas	781,783	557,831	122,814	— 78.0
Standard Oil Company of Kentucky	4,182,900	3,779,706	3,979,562	+ 5.3
Standard Oil Company of Ohio	3,362,960	1,964,605	5,602,499	+ 185.0
Sun Oil Company	9,544,085	3,085,119	6,959,677	+ 125.5
Sunray Oil Corporation	950,850	569,314	605,552	+ 6.3
Superior Oil Corporation	446,246	332,579	61,548	— 81.4
The Texas Corporation	54,574,319	23,139,030	32,886,807	+ 42.2
Texas Pacific Coal & Oil Company	983,303	1,035,599	889,238	— 14.1
Tide Water Associated Oil Company	15,801,383	10,427,272	8,958,971	— 14.0
Union Oil Company of California	12,061,332	6,862,758	5,846,240	— 16.9
Universal Consolidated Oil Company (California)	40,578	350,657	513,393	+ 46.6
H. F. Wilcox Oil & Gas Company	127,283	254,057	361,261	+ 42.1
Woodley Petroleum Company	215,590	90,629	119,181	+ 31.5
Total 44 Companies	282,217,729	138,532,141	166,892,114	+ 20.5

* Loss. † Before federal income taxes.



day in excess of market demand. For the whole month, the excess will be approximately 10,000,000 barrels, and that surplus must either go to crude storage or else be converted into surplus supplies of gasoline and other products.

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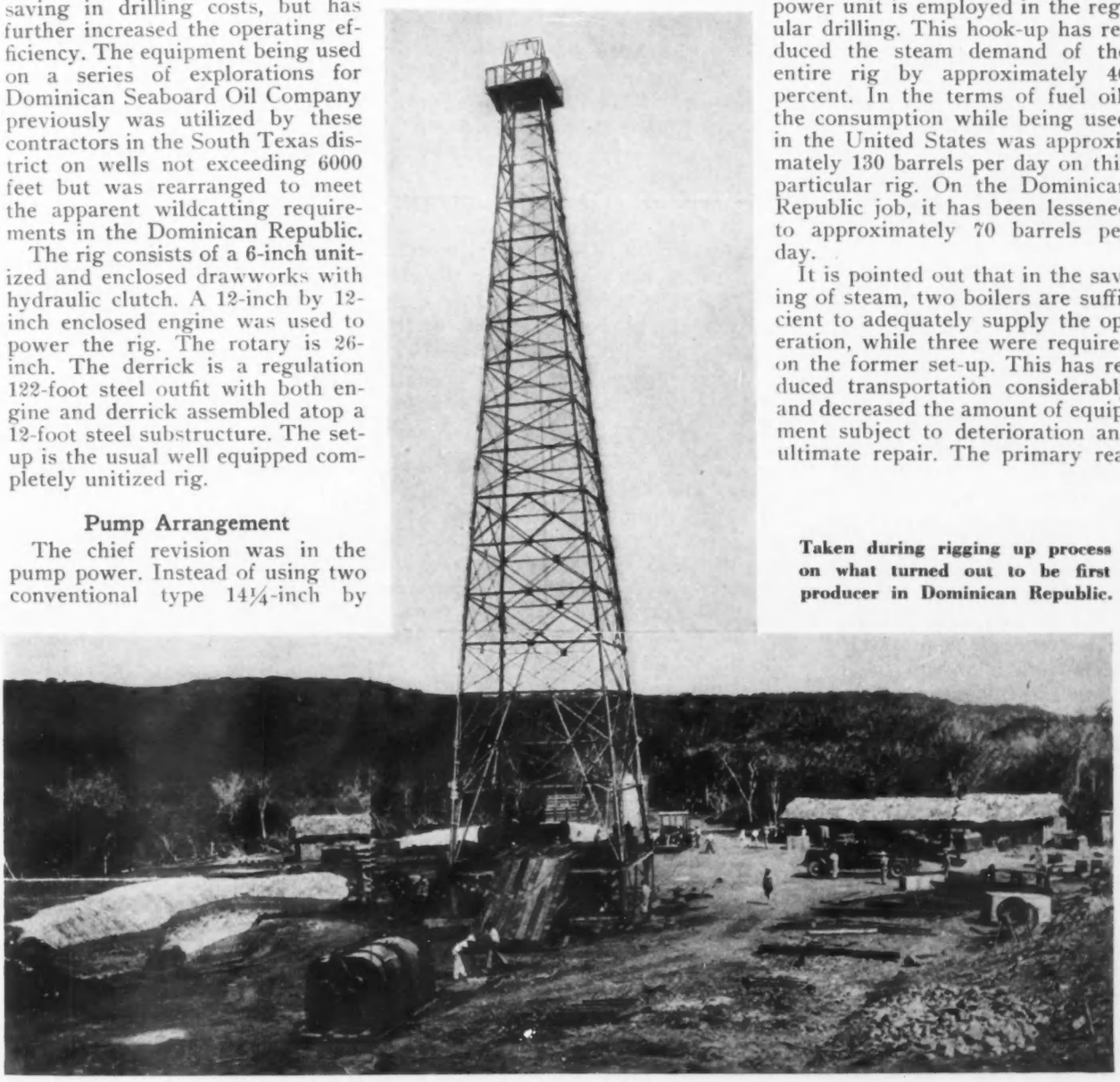


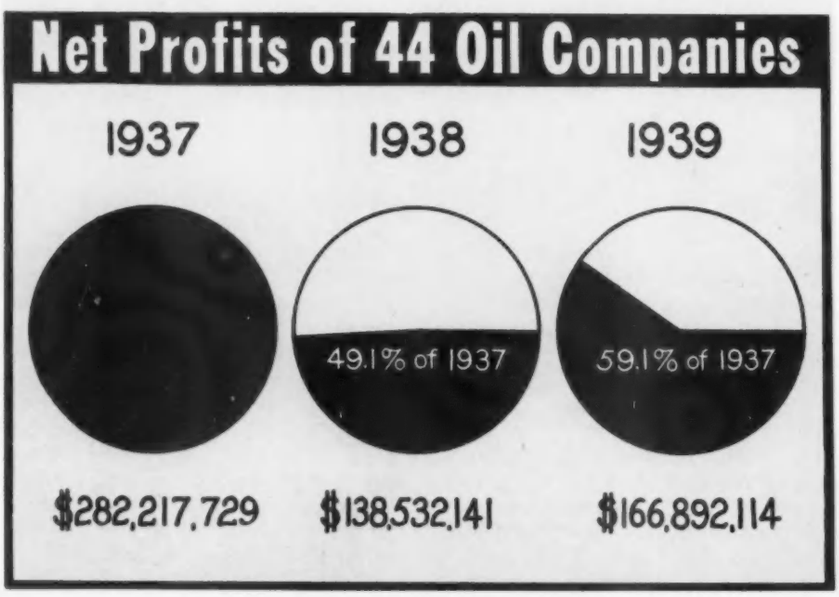
Taken during rigging up process on what turned out to be first producer in Dominican Republic.

Net Income of 44 Oil Companies 20.5 Percent Greater in 1939 Than in 1938, 40.9 Percent Smaller Than in 1937

Net profits after all deductions, including interest, depreciation, depletion, amortization, federal taxes, minority interest, etc.

COMPANY	1937	1938	1939	Percent Change, 1938-1939
American Republics Corporation	$351,751	*$287,754	$186,861	.....
Argo Oil Corporation (Delaware)	391,388	391,388	59,068	— 85.0
Atlantic Refining Company	9,935,045	5,023,282	4,310,659	— 14.2
Barnsdall Oil Company	1,903,029	2,837,897	1,720,292	— 41.2
Barnsdall Refining Corporation (Now Bareco Oil Company)	*860,359	*1,432,519	*157,154	.....
Bishop Oil Company	320,481	46,481	309	— 97.5
Derby Oil & Refining Corporation	426,823	*164,358	*21,248	.....
Eureka Pipe Line Company	*5,849	*14,937	31,378	.....
Fohs Oil Company	1,476,458	777,684	215,342	— 72.4
Houston Oil Company of Texas and Houston Pipe Line Company	1,574,327	1,304,735	1,010,530	— 22.5
Lone Star Gas Company	6,820,788	5,304,104	5,402,871	+ 1.8
Margay Oil Corporation	489,043	342,416	228,352	— 33.3
Mid-Continent Petroleum Corporation	5,304,877	1,043,791	2,650,501	+ 153.5
Midwest Oil Company	944,545	931,623	990,281	+ 6.3
National Transit Company (Pipe Lines)	604,985	447,650	463,624	+ 3.6
Navarro Oil Company	†674,933	†579,947	†232,566	— 60.0
North Central Texas Oil Company, Incorporated	134,122	89,753	73,000	— 18.6
The Ohio Oil Company, Incorporated	11,862,107	4,582,964	1,492,086	— 67.5
Pacific Western Oil Corporation	1,388,710	1,217,378	813,689	— 33.5
Pan American Petroleum & Transport Company	5,539,384	363,275	5,188,825	+1330.0
Panhandle Producing & Refining Company	212,050	53,933	9,536	— 85.8
Phillips Petroleum Company	24,113,874	9,049,122	9,833,314	+ 8.7
Plymouth Oil Company	2,935,342	2,609,091	2,475,052	— 5.1
Pure Oil Company	11,403,805	5,412,903	8,290,418	+ 53.2
Quaker State Oil Refining Corporation	1,041,848	515,116	1,584,026	+ 208.
Reiter-Foster Oil Corporation	*36,796	*20,040	8,550	.....
Seaboard Oil Company	2,447,130	1,895,790	1,746,464	— 7.8
Shell Union Oil Corporation	20,668,880	11,318,423	11,805,712	+ 4.2
Skelly Oil Company	6,488,346	2,650,054	2,360,783	— 10.9
South Penn Oil Company	4,643,266	1,441,817	2,837,042	+ 96.6
Standard Oil Company of Indiana	55,950,784	27,771,976	34,142,642	+ 22.9
Standard Oil Company of Kansas	781,783	557,831	122,814	— 78.0
Standard Oil Company of Kentucky	4,182,900	3,779,706	3,979,562	+ 5.3
Standard Oil Company of Ohio	3,362,960	1,964,605	5,602,499	+ 185.0
Sun Oil Company	9,544,085	3,085,119	6,959,677	+ 125.5
Sunray Oil Corporation	950,850	569,314	605,552	+ 6.3
Superior Oil Corporation	446,246	332,579	61,548	— 81.4
The Texas Corporation	54,574,319	23,139,030	32,886,807	+ 42.2
Texas Pacific Coal & Oil Company	983,303	1,035,599	889,238	— 14.1
Tide Water Associated Oil Company	15,801,383	10,427,272	8,958,971	— 14.0
Union Oil Company of California	12,061,332	6,862,758	5,846,240	— 16.9
Universal Consolidated Oil Company (California)	40,578	350,657	513,393	+ 46.6
H. F. Wilcox Oil & Gas Company	127,283	254,057	361,261	+ 42.1
Woodley Petroleum Company	215,590	90,629	119,181	+ 31.5
Total 44 Companies	282,217,729	138,532,141	166,892,114	+ 20.5

* Loss. † Before federal income taxes.



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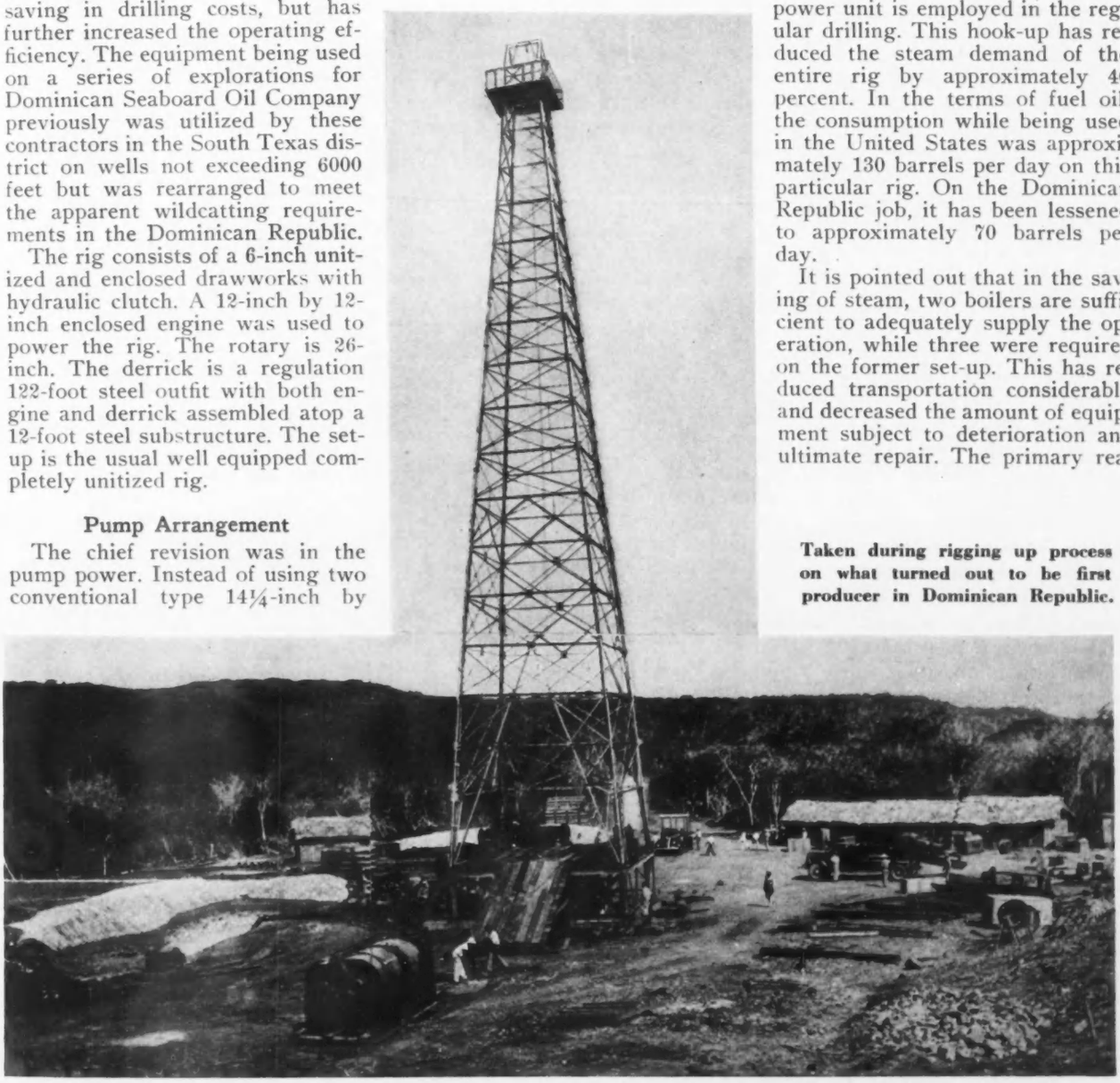

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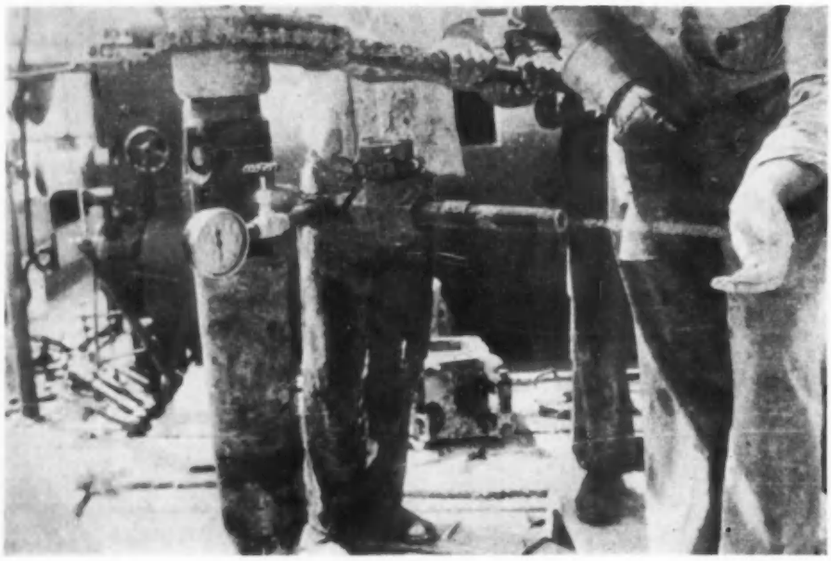


The first blow of gas on ancient Hispaniola is seen hitting the hand of Dominican Seaboard Oil Company's driller.

son for steam arrangement, however was because of the lack of fuel available in the Dominican Republic. Prior to the drilling by Dominican Seaboard Oil Company, there was no production in the nation. Fuel had to be shipped in to one of the ports, then trucked to location. The company was fortunate in developing a source of fuel on its first operation.

The Allen and Morris rig was moved into the Dominican Republic in the early summer of 1939, unloading it at the Port of Azua, which is upstream from Ocoa Bay at the south side of the island facing the Caribbean Sea. The wharves had to be rebuilt under the government's supervision. The 800-ton drilling equipment and auxiliary supplies were unloaded by natives and members of the crews in two days, and the materials trucked approximately 20 kilometers inland to the location of the first operation.

Maleno Development

The first operation was staked on the Maleno structure and the well was known as Maleno 1. It was spudded on July 4, drilled to 1197 feet, plugged back to a sand and sandy shale section at 440-80 feet, where it flowed 9 barrels of 19-gravity oil per hour through 2-inch tubing with no pressure while flowing, but with 190 pounds closed in pressure on casing. This opened the first oil production in the republic. Crude produced from the discovery well has been used only for firing of boilers in the subsequent operations. The well is kept closed in and allowed to flow only when additional supplies of oil are needed.

The rig was skidded 200 feet and No. 1-A commenced. It was drilled to 3033 feet without success, then plugged back to the 400-foot sand and completed. It found the formations shallower than in the first well, indicating a steep structural condition.

Quita Coraza

The next well was drilled about 20 kilometers from the first two and was on the Quita Coraza prospect. It rigged up on October 9, 1939, and was finished January 15. It recovered sulphur water on a drill-stem test at 4071-4101 feet in limestone. The well was drilled ahead to 4300 feet, still in limestone.

El Mogote prospect is the present and fourth exploration, being 20 kilometers from the preceding wildcat. Derrick was erected January 20 and on March 1, the test was drilling at 3341 feet, possibly to be carried another 1000 feet.

Drilling of these four wells has been carried on with considerable speed and with no mishaps. The greater part of the hole has been made with rock bits, fish tails being used in a small amount of shale, sandy shale and sand. Hard head coring tools, likewise, are required. Water for drilling is no problem. A number of large rivers run from the mountains into the sea. Pipe lines are constructed from these rivers to location.

Casing Program

The casing program is typical of any Gulf Coast operation in the United States. In the second well drilled in the Dominican Republic, 16-inch conductor pipe was landed at 350 feet; 10¾-inch surface casing was set at 1121 feet. The program calls for a 7-inch producing string to be set atop the producing level, if and when encountered.

Two American drilling crews, consisting of one driller and three roughnecks, work 12-hour shifts 7 days per week. Four natives comprise each of three 8-hour, 7-day per week crews which are employed to work with the Americans.

During the early stages of development in the nation it was necessary for the company to include complete facilities for maintenance of the drilling equipment. Some $60,000 worth of auxiliary drilling equipment was included with the drilling rig when it was transported to location. This included replacement parts for any portion of the rig which might have become broken or quickly worn. In addition, testing tools, additional drilling lines, unusually large supply of drilling bits, drill stem, etc., were consigned to the project. A repair shop was set up. With the exception of machine shops in connection with the sugar mills, mechanical assistance is virtually out of the question.

Transportation had to be provided by the company. Their own trucks were shipped from the United States for use in hauling machinery, equipment and fuel oil. Roads through the Republic are good, being oiled. Roads to the locations, however, had to be constructed.

Geological Study Reveals

Fields Better Than Tinsley Likely for Mississippi

By JOHN D. TODD
Roper and Todd, Consulting Geologists

A LITTLE over six months ago, on September 5, 1939, Union Producing Company opened the Tinsley field in Section 13-10n-3w, Yazoo County, Mississippi. While the importance of this discovery was at first questioned by many, additional proven acreage and deeper producing horizons have demonstrated that it will be a large and profitable field.

Interest and activity in the state has weekly increased in Mississippi since it became the twenty-second producing state. This increase is due mainly to a few aggressive concerns which need the oil, and believe in the merit of the area, feeling that there must be other oil fields. The great majority of the companies hope that it won't, but fear that it might, be another Illinois and are keeping a watchful eye on the area.

In considering the 33,000,000-acre area in this article, more attention will be given to the Cretaceous section; not because it is considered to have any greater ultimate possibilities but because:

More is known about the Cretaceous than the rest of the section.

Interest is greater at present in the Cretaceous section because of the Tinsley discovery; and

Development of the Cretaceous area is certain to come first.

Stratigraphy

The Cockfield and Sparta have definite possibilities over a limited part of southern Mississippi, but the most promising horizon above the Cretaceous is the Wilcox. It is likely that development of this trend will come slowly, since quite a large amount of geophysical

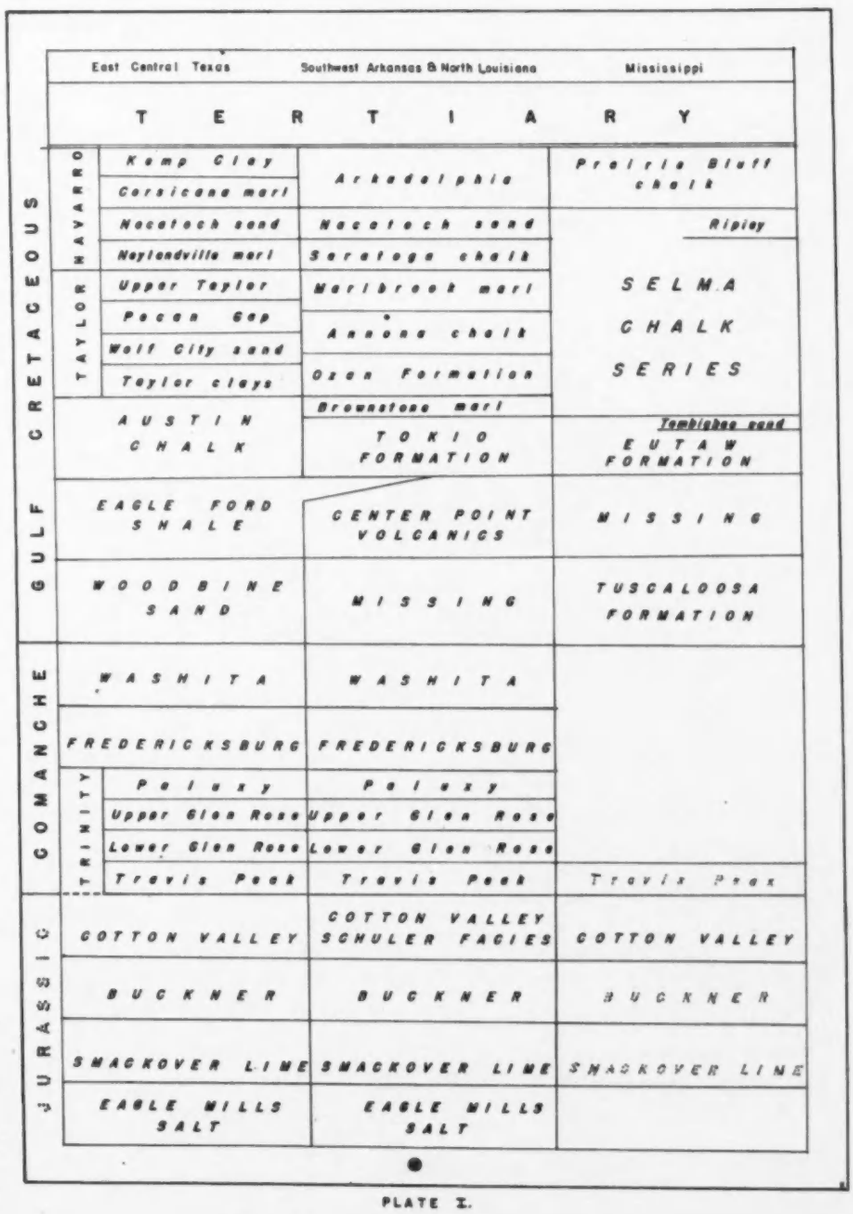
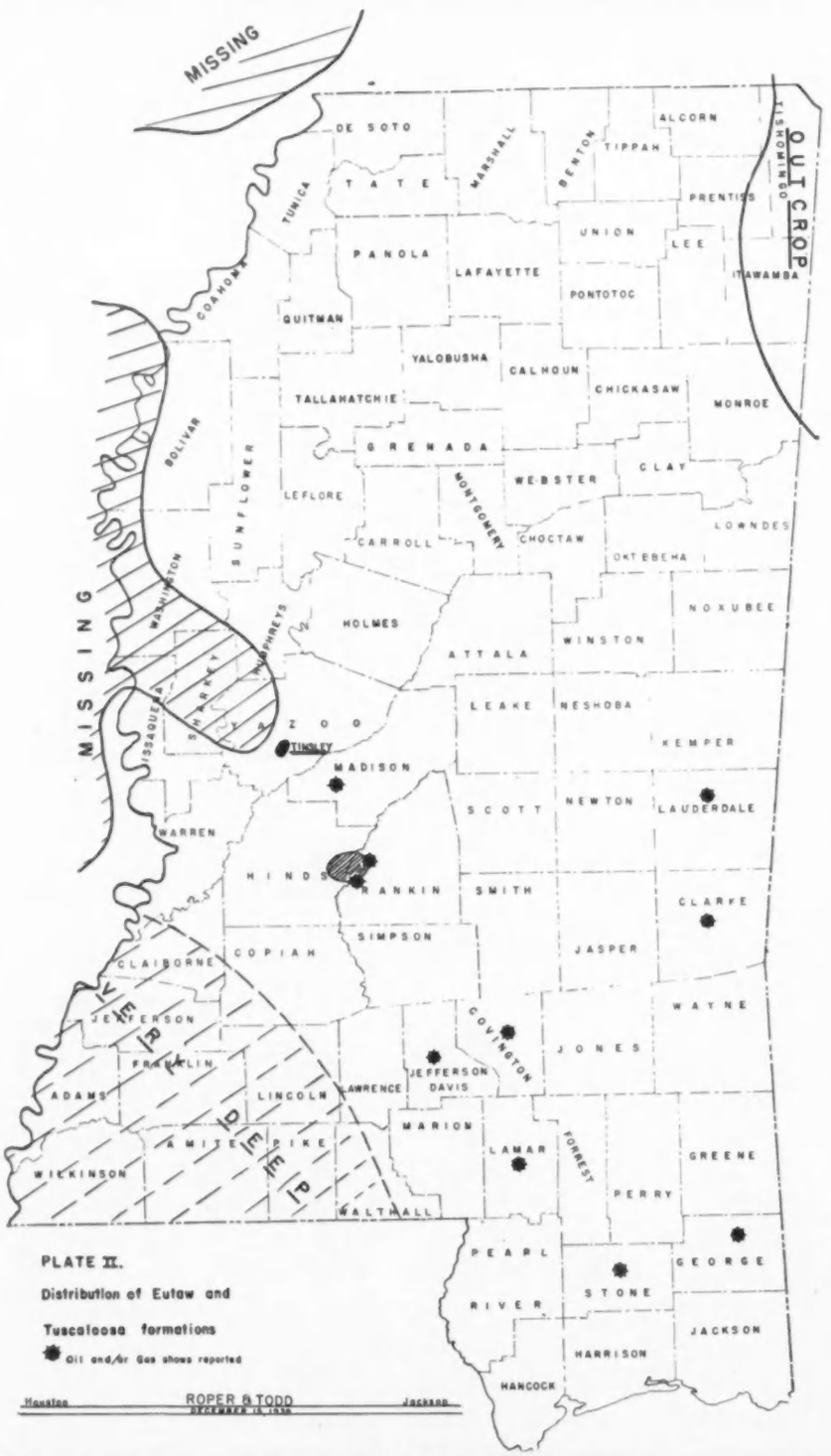


PLATE I.

Eutaw Formation Is Expected to Become a Major Oil-Producing Horizon in Mississippi



work has been done in the Wilcox trend of Mississippi, and much favorable acreage is held under cheap, long-term leases. Heavy oil and gas have been found in sands of the basal Wilcox on the flanks of the Jackson Uplift, and shows have been reported in several wells in the southern part of the state. The Wilcox must be considered as a horizon of definite possibilities in southern Mississippi.

Mississippi-Alabama Line

At the outcrop along the Mississippi-Alabama line the Cretaceous section comprises a column of about 2300 feet of sediments. This section has been divided into four main parts: Ripley, Selma Chalk, Eutaw and Tuscaloosa. The correlation of the Mississippi Cretaceous section with the classic section of East Texas, and with the intervening section of North Louisiana and Arkansas is shown as Plate I.

The Prairie Bluff Chalk is a formation of limited occurrence in eastern Mississippi, and is included on the chart for completeness.

The Ripley is usually considered the uppermost division of the Mississippi Cretaceous. It is well developed in the northern part of the state, where it carries sizeable bodies of sand. It is missing or replaced by chalk in the southern part of the state. Since it is by definition sandy, it is a prospective producing horizon in the central and northern part of the state.

Beneath the Ripley lies the Selma Chalk, a series of massive, weakly bedded chalks, decidedly sandy in the upper 100 feet. The Selma is thinnest in the central western part of the state around the common corners of Mississippi, Louisiana and Arkansas; and from this point it thickens northeast, east and south, attaining its maximum thickness of over 1400 feet in the southern part of the state. The Jackson gas is from the eroded contact of the Midway and the Selma; and showings of oil were encountered in the sandy streaks of the Selma in Union Producing Company's Anderson 1, in Madison County.

The Eutaw formation underlies the Selma Chalk, and consists of about 300 feet of irregularly bedded, glauconitic sands and laminated clays. The Tombigbee member, comprising the top 100 feet of the Eutaw, is a massive, glauconitic sand, parts of which have become indurated to form layers of calcareous sandstone and sand-

stone concretions. The Eutaw formation underlies practically all of the state, and is counted on to become a major oil-producing horizon, particularly in the central third of the state. The Woodruff sand at Tinsley is at the contact of the Eutaw and the Selma; the Stevens sand of the Tinsley is considered to be of lower Eutaw age. Gas was encountered in the Eutaw in the Topton well in Lauderdale County; heavy oil was found in the Eutaw in the Gulf well in Clarke County; and asphalt-impregnated sands of Eutaw age were penetrated on the flank of the Midway Dome in Lamar County.

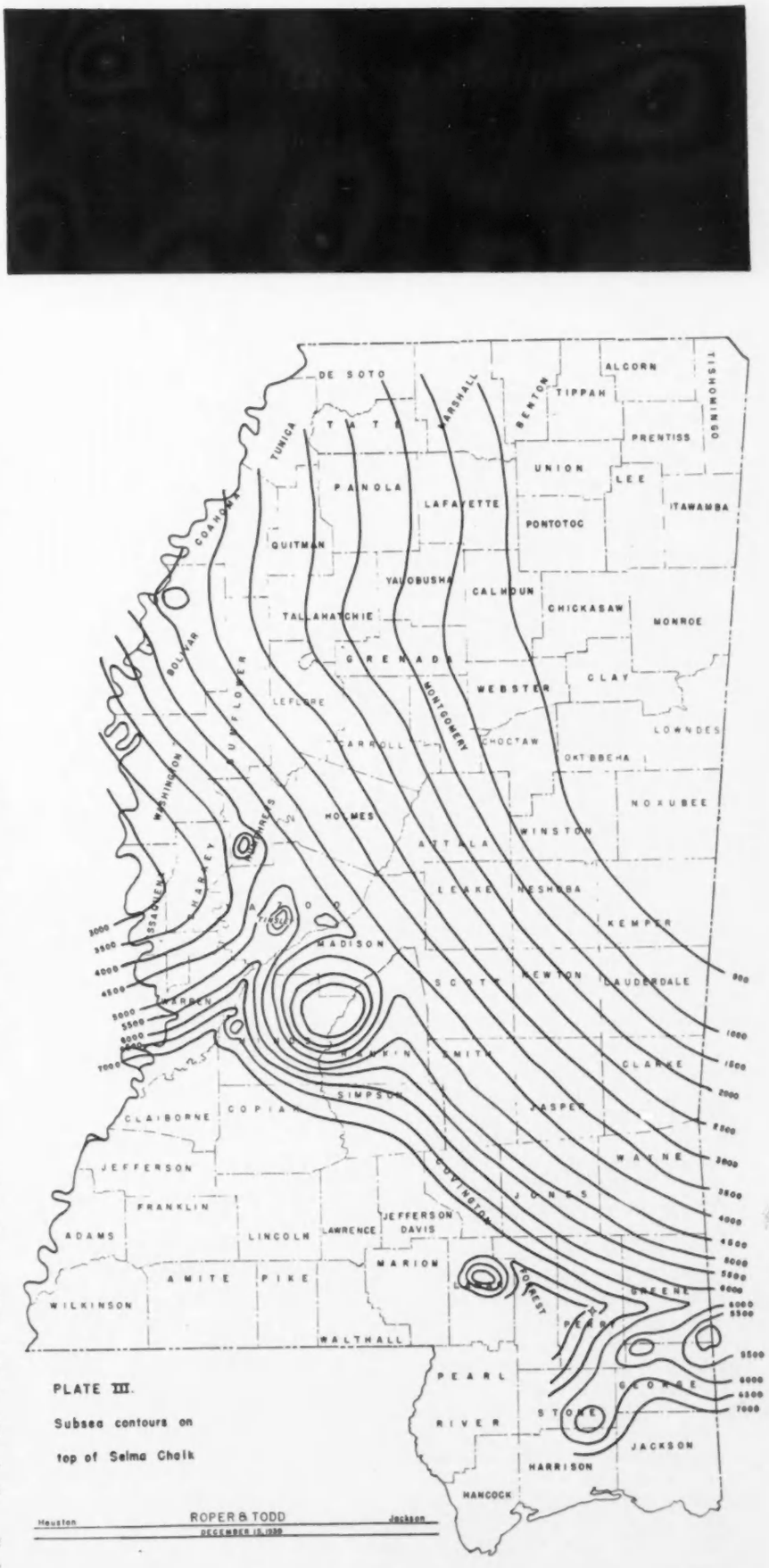
The basal member of the Cretaceous is the Tuscaloosa, consisting of about 1000 feet of irregularly bedded gravels, sands and shales. This formation is largely non-marine, and is the equivalent of the Woodbine of East Texas, and has great potentialities in Mississippi. Showings of oil in the Tuscaloosa were encountered on the flanks of the Jackson Uplift; live oil and source materials were found in the Tuscaloosa in the Topton well in Lauderdale County; and wells at Tinsley have found some oil in the Tuscaloosa.

Tuscaloosa and Eutaw are both missing in west central Mississippi and in the adjacent parts of Louisiana and Arkansas, and both probably are missing over such pronounced structures as the Jackson Uplift, and the larger igneous and salt plugs. A map showing the distribution of the Tuscaloosa and Eutaw formations is shown as Plate II. Location of the various showings of oil in the state is also shown on this map.

Below the Cretaceous

Below the Cretaceous, the Comanche sediments have definite possibilities. It appears that the Comanche is missing in the northern part of the state, where the Cretaceous lies directly on the Paleozoics. However, in the central and southern part of the state a Comanchean section of considerable thickness has been encountered. From the data available, the Cotton Valley is much sandier than it is in Northern Louisiana, where it has already proven itself be a good producer. Where present, the Comanchean section has great possibilities.

Below the Comanche beds, the Smackover Lime (probably of Jurassic age, but perhaps the "big



lime" of the Permean) appears to be present in North Central Mississippi and should have possibilities of being as prolific as it is in southern Arkansas.

Within the Paleozoic section in Northern Mississippi, much can be expected of the Pennsylvanian, the Mississippian (which has already produced gas commercially in northeastern Mississippi) and the Ordovician, all of which have proven so prolific in other parts of the country.

Regional Structure

The structure of Mississippi is dominated by a geosyncline, whose axis is roughly parallel to the present course of the Mississippi River; this geosyncline is of Tertiary origin, and was formed as a part of the Mississippi Embayment. The structure of pre-Tertiary times is not yet fully demonstrated, but it is known to be very different from the present form; it is known that the tri-state area, around the corners of Mississippi, Louisiana, and Arkansas, was a positive area in Cretaceous times. It is known that this tri-state area was above the sea in Eutaw and Tuscaloosa times, so that these formations pinch out in that direction.

A considerable part of the central portion of the state is dominated by the Jackson Uplift. The Jackson Uplift is a feature of major proportions of igneous origin and Cretaceous age; it is considered to have 2500 feet of uplift and influences the structure of several counties. About 8000 acres on the top comprises the gas field, now nearly exhausted.

The trend of igneous plugs in southeastern Arkansas and west central Mississippi appears to represent a continuation of the Ouachita deformation (of Pennsylvania-Permean age). It appears likely that the Jackson Uplift may be in some way associated with the Ouachita Mountains.

A portion of northeastern Mississippi is influenced by the south extension of the Cincinnati Arch—a positive movement of Devonian time. The exact location and extent of the Cincinnati Arch is not known, as it is largely covered by later sediments, but it is thought to enter the state at the northeast corner, to account for the Amory gas field in Monroe County, and perhaps to continue on to the Jackson Uplift.

The state has had a most complex history, which has been complicated by successive long emergencies and submergencies. Unconformities of major proportions are the rule, instead of the exception in this area.

A structure map on top of the Selma, the most reliable available marker in the area, is shown as Plate III. This map illustrates the present structural result of the history of the area.

Local Structures

The eventful geological history of Mississippi has resulted in a great variety of structural forms; in fact, nearly every available form of structure is represented in this state. One of the most spectacular forms of structure is the igneous plugs.

Igneous plugs have been located, upon magnetometer prospects, by Mid-Continent Development Company's Lee 1, Washington County; Union Producing Company's Box 1, Humphreys County, Union Producing Company's Lanhart 1, Sharkey County; and Atlantic Refining Company's Houston 1, Sharkey County.

Igneous materials also have been encountered on the Jackson Uplift, and from pronounced magnetic anomalies a number of other igneous plugs are suspected to exist. So far, none of these igneous core structures have proven productive, but most of them have had only one top test and no flank test at all.

The igneous plugs which have drilled are on the more pronounced magnetic anomalies, some with closures of 600 gammas, where it could be expected that the igneous core would be closest to the surface. And those drilled appear to be truly buried mountains, that rise up through 4000 to 5000 feet of Upper and Lower Cretaceous sediments; so that wells drill directly from the Midway into igneous material. It is suggested that some of the weaker anomalies might represent structures where the igneous intrusion produced only a gentle arching instead of pierced structures; such gentler structures might prove productive of gas if not of oil. And a good gas field is as desirable as an oil field in Mississippi or Alabama.

Another form of structure known to exist in the area is the large anticline. Examples of this are the Hatchitigbee Anticline, just across the line in Alabama with the west and extending into Mississippi; and the Alamucha Anticline in southeastern Lauderdale County, Mississippi. These structures seem to skirt the southern flank of the Appalachian Mountains, and it is expremely likely that other such structures exist. The Hatchitigbee Anticline has been meagerly tested, but is at present under leases soon to expire and is in line for deeper and most intensive prospecting; apparently there is no thinning of beds over this anticline; it may be too recent a structure to produce. In addition to these larger and easier to locate structures, geophysical work indicates that many other smaller folds and fault-controlled closures exist in the same area.

One of the type of structures most easily detected by geophysics is the piercement-type salt dome. Two such salt domes have been found: the Midway Dome in Lamar County and the Edwards Dome in Hinds County. Additional salt domes of the piercement type are strongly suspected, from geophysical evidence, at other locations in the state; and piercement-type domes have been found in the adjoining part of northeastern Louisiana. Neither of these two domes has proven productive, and this type of structure has been hastily condemned; in the midst of later discoveries we tend to forget that the first salt domes discovered on the Gulf Coast, the Five Islands, never have produced much oil. Since piercement-type domes are detectable by gravity surveys, by reflection seismograph, and by refraction seismograph, it is almost certain that other such domes will be found, and they are all potential oil reservoirs. Deep-seated salt structures could logically be expected from the presence of the piercement form of salt structures. The existence of this form of structure is considered to be proven by the Tinsley Dome, and this form of structure is at present the most sought after in the intense geophysical survey of the state by crews. Such deep-seated salt structures show up as gravity closures, but have no magnetic anomaly; they are clearly indicated on reflection seismograph surveys, but often, because of local difficulties, require the closest and most careful form of work. Most of the areas that have been leased in recent years were gravity anomalies of the strongest type; and it is being assumed by many of the companies that such strong anomalies will prove to be piercement-type domes, and that the more desirable deep-

Here's the answer

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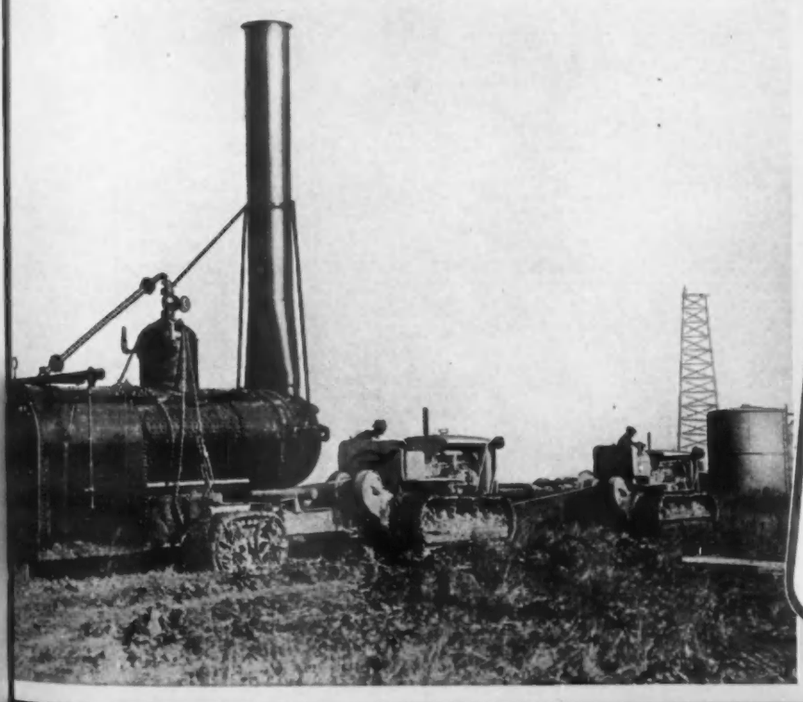

THERE'S no doubting the economy and wisdom of waiting till a field proves itself before you go to the expense of roads. In the meantime, though, you've got to get in with equipment—*on time, and for as little outlay as possible!*

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seated structures are yet to be found.

Tinsley Field

The deep-seated salt structure about which the most is known, and in which interest is at present the keenest, is the Tinsley oil field; for this reason a consideration of the facts known about it is apropos. The Tinsley area has been a surface prospect for many years; it had been shot with seismograph by at least one oil company. However, along with the rest of the state it had fallen into disrepute and was rediscovered by the Mississippi Geological Survey in early 1939, when they located an inlier and mapped 135 feet of closure on top of the Moody Branch marl. Gravity work shows an elongate NNE-SSW minimum, of 1½ to 2 millidyne closure and no magnetic anomaly is known in the area. Recent reflection seismograph work shows 300 to 600 feet of closure on the top of the Selma as a NNW-SSE anticline of major proportions.

A preliminary map of the Tinsley field is shown as Plate IV. Contours are on top of the Woodruff Sand and are somewhat generalized to show the general shape of the structure rather than trying to predict the producing area. Several faults, with throws from 80 to 300 feet are considered to exist within the producing area. The striking similarity to one of our coastal salt dome fault patterns is very apparent. Also the reason for the low oil/gas ratios may be suggested by the faults.

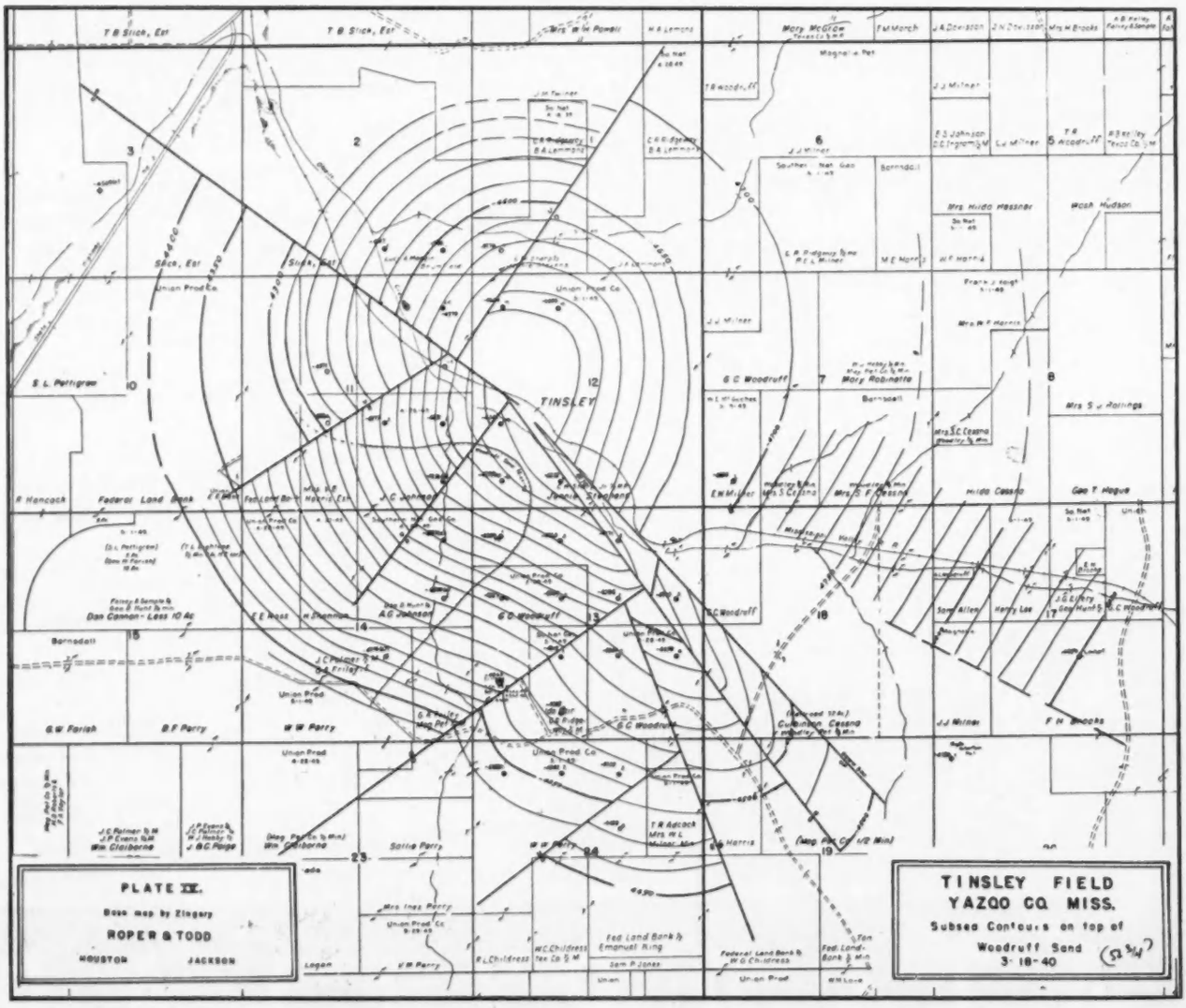
The highest well in the field is Union Producing Company's Stevens 2. The best well potential is Johnson Brumfield 1, which made 864 barrels on ¼-inch choke. The wells make an average of 2200 barrels a week, average casing pressure is 150 and average tubing pressure is 175 pounds; average oil/gas ratio is 75:1.

There are 28 producers in the field and 2000 to 2500 acres seem proven. There is an oil column of 255 feet on the upside of the fault and 115 feet on the down side.

Woodruff Sand averages 20 feet in thickness, but thickens up on the flanks, attaining a maximum thickness of 100 feet; the Stevens 10 feet, and the Hunt 15 feet. Using the two main sands, a 2000-acre basis and 500 barrels per acre-foot, there seems to be a reserve of 30,000,000 barrels. Five of the wells are on pump, so it appears that at present rate of production 50-70 percent of the oil will produce on pump. Wells pump 400 barrels a day.

Oil is 35 gravity at 74 degrees and sells for 78 cents at the field.

Tinsley is a very large structure that produces the strongest kind of geophysical anomaly; and this no doubt accounts for it being the first oil field in Mississippi. It is considered that some of the low relief, harder to find structures are apt to result in more satisfactory



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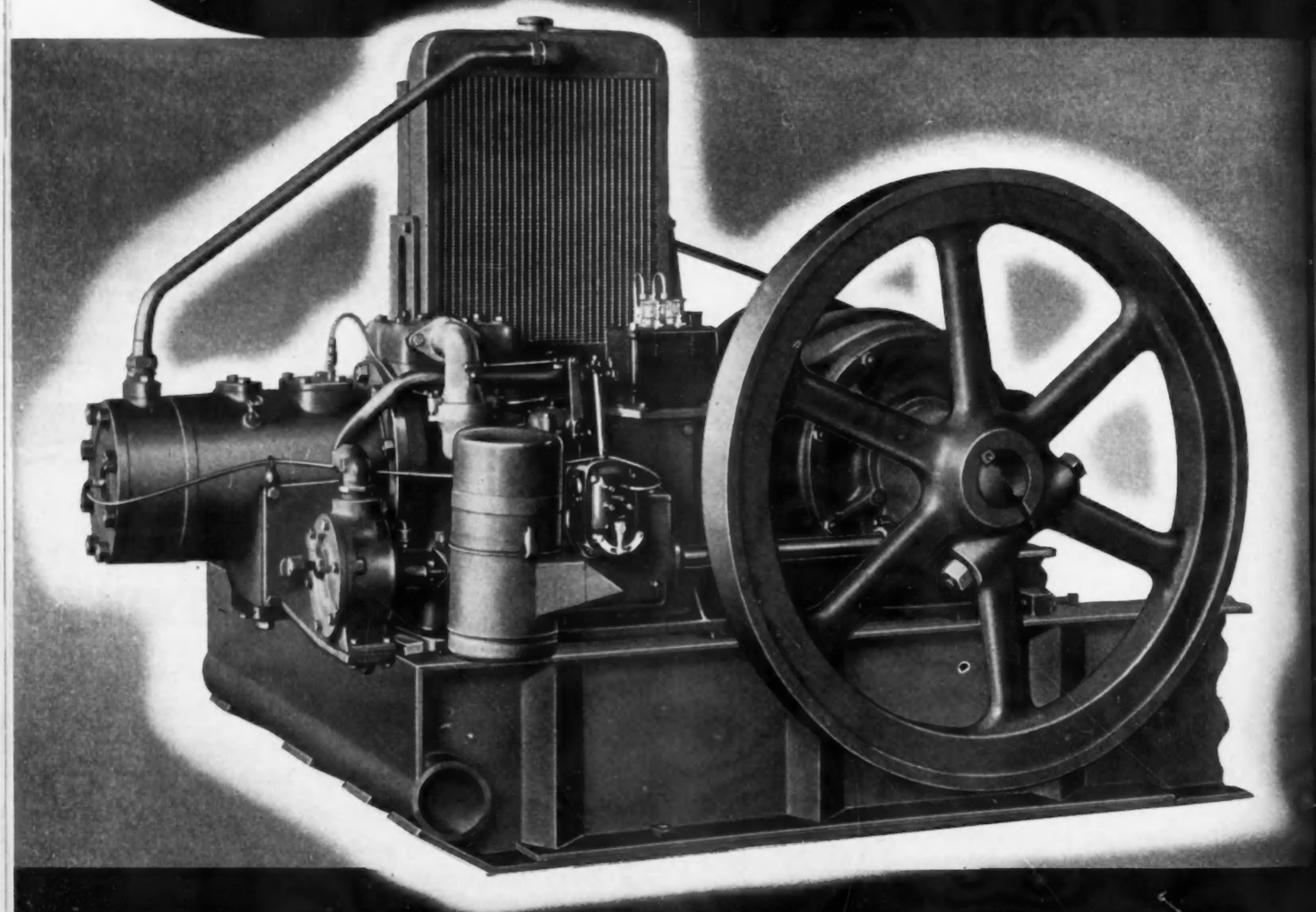

● Same simplicity, ease of handling and low operating cost as the larger Type "C" horizontals. The pumper takes care of these engines — no special service department required. Single flywheel, built-in clutch, radiator and water pump. Quick and inexpensive to install.

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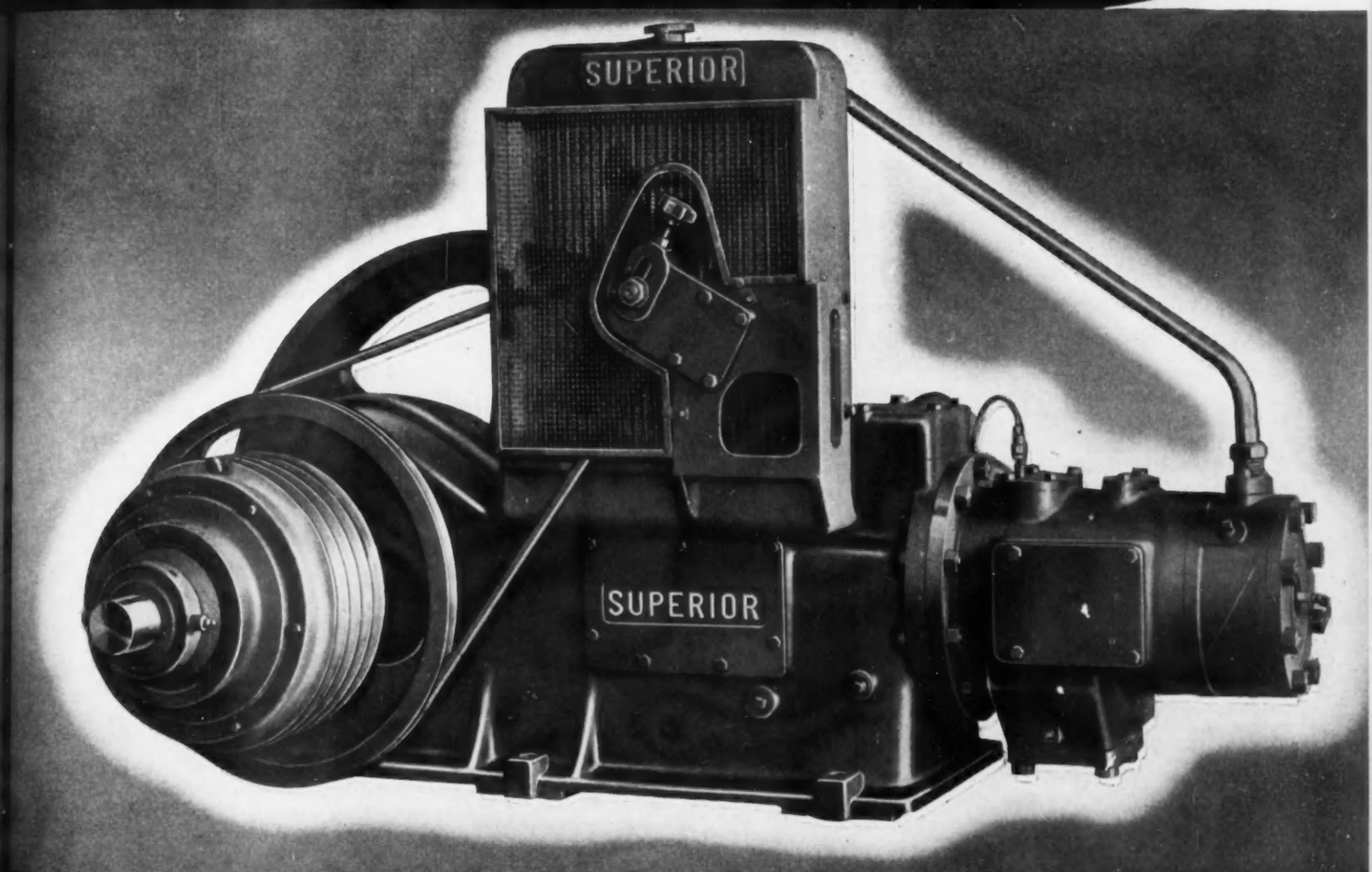

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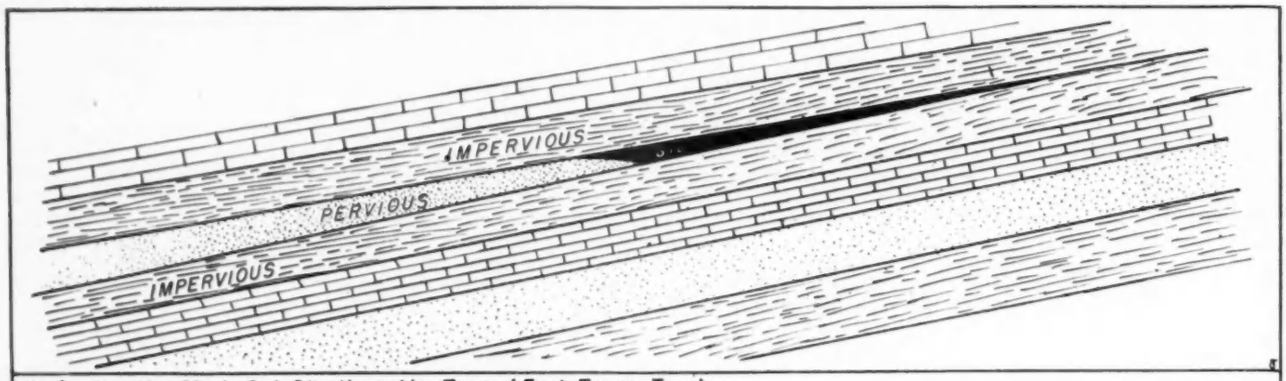


Fig.1. Up-dip Pinch Out Stratigraphic Trap (East Texas Type)

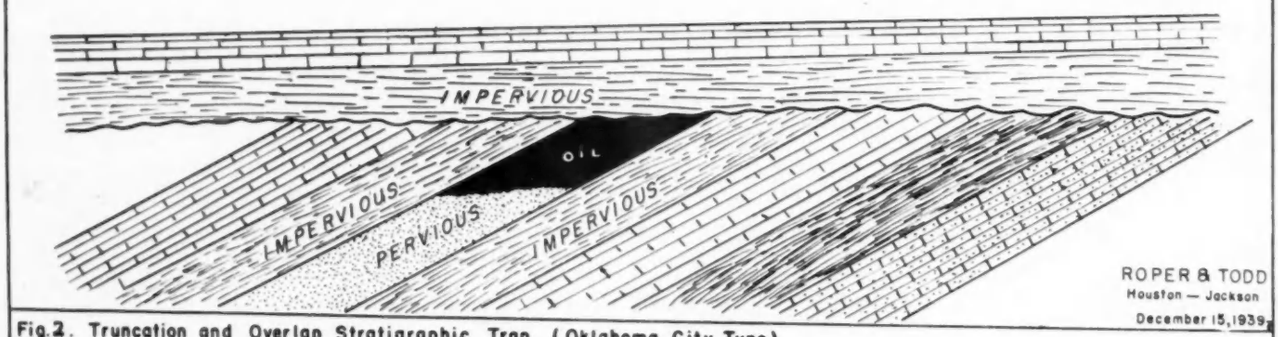


Fig.2. Truncation and Overlap Stratigraphic Trap (Oklahoma City Type)

PLATE V.

reservoirs with greater sand thickness, more regular accumulation, and better oil-gas ratios.

Stratigraphic Traps

The possibilities of stratigraphic exploration are yearly coming more into prominence everywhere, but there is no place where the possibilities of stratigraphic trapping are more obvious than in Mississippi. When it is considered that half of the oil from the largest fields in the nation is produced from stratigraphic traps; possibilities of stratigraphic trapping must be considered in appraising the possibilities of Mississippi.

The Eutaw and Tuscaloosa both pinch out in west central Mississippi, as mentioned above, so there is a real possibility of one or more East Texas-type traps in that area. Similarly the entire Upper and Lower Cretaceous pinch out over the igneous ridge in Sharkey, Washington and Humphreys counties; thus affording other possibilities of up-dip pinch-out stratigraphic traps. In the same manner these formations, and perhaps others, do not go across the Jackson Uplift, thus affording possibilities of pinch-out fields all the way around the uplift (see Plate V, Figure 1). Several of these cases are so similar to the pinchout of the Woodbine in East Texas that several wells are already drilling and others no doubt will be drilled.

Another possibility of stratigraphic trapping afforded over a large part of the state is the angular unconformity between the base of the Cretaceous and the underlying Comanchean and Paleozoic beds. This truncation and overlap must result in many porous limes and sands being sealed by impervious beds above (see Plate V, Figure 2). The possibilities of this type of trap are so widespread and enormous, as to lend unusual possibilities to even the random wildcat, so long as it drills through the Cretaceous. The assured drilling campaign of 1940 (estimates range from 80 to 200 wells this year) make it probable that one of these stratigraphic traps may be discovered, and of course by the laws of chance the largest of these fields will be found first.

Conclusions

That the conditions necessary for the formation, migration, and trapping of oil are present in Mississippi is proven by the Tinsley oil field.

That a study of the available evidence suggests no reason to doubt that other such oil fields do exist within the state, and it is probable that they will be located as a result of the present intense search. The facts lead one to suspect that better oil fields than Tinsley will be found in the state.*

The possibilities of stratigraphic trapping are so manifest, to give even the random wildcat a real chance of becoming a discovery well. This very unpredictability of the area, is causing prudent operators to take enough interest in the province to keep posted on developments, so that they may be forearmed in case of a major discovery.

It is not a question of whether there will be exploration and development in the area. As many as 72 geophysical crews in the state at one time, and an estimated 2,500,000 acres leased in the last six months plainly indicates that there is to be plenty of exploration. The only possible question is, what will be the results of this exploration?

* Successful drill stem test on Kingwood Oil Company's Wilburn 1, Pickens Area, Yazoo County, Miss., on March 29, 1940 has fulfilled this prophesy. The Kingwood well is located on a seismic structure showing 150' of closure as mapped by Petty Geophysical Company.

Methods of Recovering Stuck Drill Pipe

By J. E. WARREN, Carl B. King Drilling Company, Dallas, Texas

Part 2

IN Part I, which appeared under the title "Causes and Preventions of Stuck Drill Pipe" (Volume 97, No. 4, April 1, 1940, page 12), the author discussed various factors that may cause drill pipe to stick in the well bore. In the present article are detailed a number of methods of recovering the pipe in the event the precautions as above outlined have been overlooked, or there has been accident. Recovery methods are outlined both for releasing the pipe intact and in sections.

This paper was presented at the Spring Meeting of the Southwestern District, American Petroleum Institute, Division of Production, Houston, Texas, March 28-29, 1940, titled "Causes, Preventions and Recovery of Stuck Drill Pipe." The statements and opinions expressed herein are those of the author, and should not be construed as an official action or opinion of the Institute, nor of this publication.

THE methods for recovering stuck drill pipe are considered in two classifications. The first includes those methods used to free drill pipe while keeping the drill stem intact. Included are the use of oil, circulating clear water, gas slugging and mechanical methods such as spudding and bumping the pipe. The second classification includes those methods which are used in case the drill pipe can not be freed while it is intact as one unit. This includes "backing off," the use of inside cutters, shooting off pipe, "washing over," use of jars, etc. Some of the methods require the use of special tools and the service of operators killed in their use. The application of these methods and a brief description of the procedure used is given in this paper. Drill pipe above the point where it is stuck is referred to as the free portion and that below this point as the stuck portion.

Methods of Recovery While Stuck Pipe Is Intact

If a string of pipe is stuck off bottom it is considered good practice to work it downward rather than pulling up on it. Where pipe is stuck in a key seat by sand, cuttings or cavings, pulling up often will result in sticking the pipe tighter. If pipe will not work down by its own weight, it often can be freed by spudding. This is accomplished by pulling tension in the pipe and then suddenly releasing it, allowing the full weight of the pipe to act as a compressive downward force. Care must be exercised in spudding pipe, as it may result in kinking and bending the pipe in the hole.

Bumping Pipe

Pipe stuck near the surface often can be freed by bumping it back with the use of a bumper. One method of bumping pipe is as follows: Back off the kelley joint and add a joint of drill pipe so that the stuck drill pipe extends above the rotary table. Strip a joint of casing over the kelley joint so that it is free to slide up and down for a distance of 8 or 10 feet. Install a set of clamps or elevators on the drill pipe to afford a place for the casing to strike. The joint of casing is actuated by means of a cat line so that it bumps the drill pipe downward. This method provides an effective means of bumping stuck drill stem and can also be used for bumping the drill pipe upwards. In fields where pipe is frequently stuck at shallow depths, it is advisable to make a bumper bar out of a cable-tool stem. In this practice the bumper bar is made with a bail on its upper end, and of such a diameter that it is free to work inside of 6⅝-inch drill pipe. The bottom end is rounded off to make a good surface for striking the inside of a 6⅝-inch tool joint. A section of 6⅝-inch drill pipe is screwed into the top joint of stuck drill pipe to act as a guide for the bumper bar. A set of elevators or clamps must be provided to catch the drill pipe when it is bumped loose. The bumper bar is pulled up by means of a cat line, then suddenly dropped, exerting a considerable downward jar on the drill pipe.

A jigger bar actuated by means of a sand line has been used successfully in areas where it is not customary to use a back-pressure valve in the drill stem. A striking mandrel is dropped in the drill pipe, which will allow circulation through the bit. The jigger bar is raised several feet and dropped against the mandrel. This method has the advantage of transmitting the jar to the drill stem at the point where it is stuck.

If drill pipe is stuck so that it can not be bumped or worked loose, and circulation can be established, the operator can select a method involving a change in the characteristics of the circulating fluid. Careful consideration must be given to the danger of blowouts from gas formations or high-pressure-water horizons, as these methods reduce the density. The possibility of the circulating fluid of contaminating the drilling mud and breaking down the walls of the hole must also be considered.

Lubrication with oil affords an effective means of freeing pipe, par-

ticularly if the sticking medium is shale cavings or filter cake. The oil penetrates the cavings or cake that grips the pipe breaking down shale and clay particles. Sand grains and the outside surfaces of the stuck pipe are covered with a lubricating film. The internal friction of the sticking material and its gripping action on the pipe is greatly reduced by this process. There is a wide difference in opinion as to the proper use of oil for this purpose. The following procedure is recommended by the writer:

1. Determine the free portion of pipe in the hole. The total pipe in the hole less the free portion is the stuck portion.
2. Increase the colloidal content of the mud to reduce filtration and the settling action of solids. This is done to avoid further sticking of pipe in the free portion.
3. Determine the capacity of the drill pipe and the annular space for the length of the stuck portion of pipe.
4. The amount of oil to be used varies. The writer prefers an amount equal to about four times the capacity of the annular space for the length of the stuck portion of pipe.
5. Displace the mud in the drill pipe and the annular space of the stuck portion with oil. Careful measurements should be made to assure the proper "spotting" of the oil. If the volume of oil used is insufficient to fill the annular space and the drill pipe, mud is pumped after the oil to make up the difference.
6. Displace the oil further by pumping a small amount through the bit at regular intervals. The amount of mud return should be observed in order to determine the loss of oil to formation. If oil is being lost, the amount pumped at intervals should be increased to assure complete submergence of the stuck portion with oil.
7. If the height of oil in the drill pipe exceeds that in the annular space, the difference in hydrostatic head will be reflected by pressure at the top of the drill pipe. Releasing pressure in the drill pipe will allow oil to surge back through the bit if there is no back-pressure valve in the drill stem. Alternate pumping and releasing pressure to create a washing action of the oil on the stuck portion of pipe is effective.
8. Opinions differ as to whether stuck pipe should be in tension or slack condition while lubricating with oil. The writer prefers the slack condition and recommends working the pipe at four-hour intervals.

The action of oil in freeing pipe is dependent on the penetrating quality of the oil and the amount of time the oil is in contact with the material sticking the pipe. For this reason it is believed that a low-viscosity crude oil will give the best results. Generally, stuck pipe will become free with 24 hours of exposure to oil, but many instances are known where 48 hours or more were required. It is sometimes possible to free pipe by circulating oil when the spotting method is unsuccessful.

Circulation of Water

The use of clear water as a means of freeing stuck pipe is preferred to the use of oil in many areas. Water does not contaminate drilling mud, and effects a considerable saving if the drilling mud is made up of costly admixtures. The procedure used is to fill the suction pit with clear water and start circulation, pumping the displaced mud in the reserve pit as it comes out of the hole. If the circulation of water is successful in freeing the pipe, mud should be turned into the suction pit and the water in the hole displaced without shutting down the pumps. Clear water has been circulated for periods as long as 6 hours without damaging effects to the walls of the hole.

Mud Colloids

In some cases the addition of colloidal content to the mud has been effective in freeing stuck pipe. It is important that the colloidal content of the mud be built up when a string of pipe is stuck. This precaution will help limit the sticking action to the portion of pipe originally stuck and facilitate its recovery.

Gas Slugging

The introduction of gas into the circulating system is a method used where formation will not cave at reduced pressure. It is necessary that gas under pressure be available for this purpose. The procedure is to introduce gas into the stand pipe and allow it to displace mud in the drill stem. Mud is then pumped in the drill pipe, forcing the gas slug down the pipe. The gas slug becomes compressed by reason of the hydrostatic head of mud above it and consequently occupies less space. The average density of the fluid in the drill pipe is increased by compression and is reflected at the surface by a drop in pressure. This allows the introduction of another gas slug which is followed by more mud. Repetition of this process will force the first slug of gas through the bit, where it will be compressed to a pressure equivalent to the hydrostatic head of the mud in the annular space between the drill pipe and the walls of the hole. The gas expands as it travels upward and decreases the average density of the fluid in the annular space. The resulting drop in hydrostatic head permits the increased amounts of gas to be introduced in the drill pipe.

The velocity of the fluids in the annular space as a result of gas slugging greatly exceeds that which can be accomplished by the pumps. The jet effect resulting from the increased velocity is effective in washing cavings from around the stuck portion of pipe.

Acid

Hydrochloric acid is useful in freeing pipe which has been stuck in limestone or by limestone cuttings. The procedure is similar to that used in spotting oil.

Recovery of Free Portion of Pipe

If the pipe can not be freed as a whole, it then becomes necessary to recover it in sections. The first step then is to recover that portion above the point where it is stuck.

Safety Joint

It is recommended that a safety joint be used in areas that are particularly hazardous. A safety joint installed above the drill collar provides a means of breaking the pipe at this point, and the drill pipe above the safety joint can be recovered. Safety joints are designed to unscrew by turning the drill pipe to the left. The construction permits unscrewing with much less breaking torque than is necessary to break the other joints in the string. This assures that the break will be made at the safety joint. Another advantage in using a safety joint is that a back-off can be made and the hole kept in condition until a decision is made as to recovery methods.

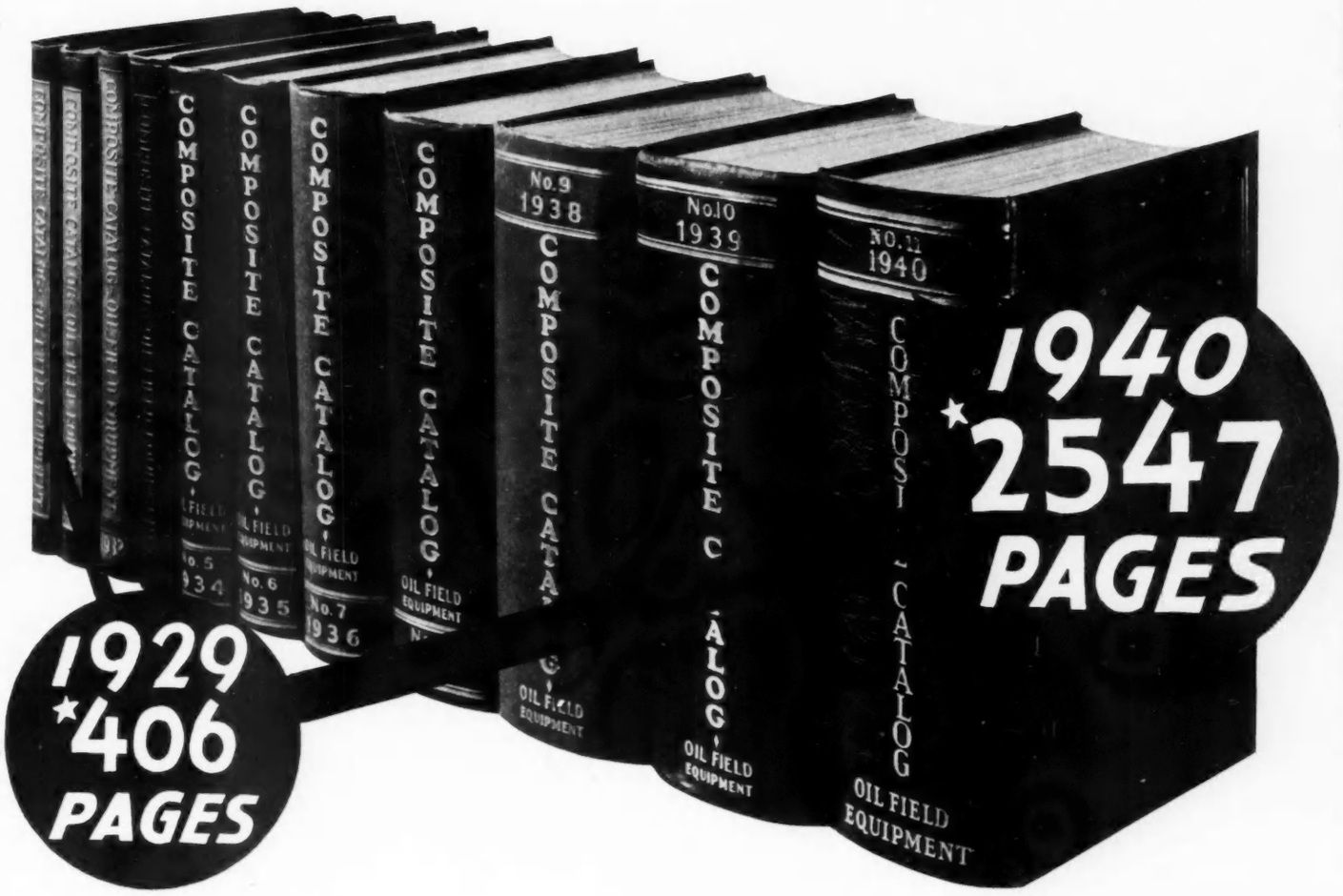
Determining Amount of Free Pipe

It is important to know how much pipe is free above the point where it is stuck. Hayward[2] described two methods which have proven this value. His second method is preferable,[3] but can not be applied unless drill pipe in the stuck string projects above the derrick floor. The first section must be used if the kelley joint is partly in the hole. A variation of this method is described at the end of this paper.

Backing Off Pipe

Backing off pipe is a method commonly used to recover the free portion of pipe. It is important that the back-off be made as near as possible to the point where the

[2] J. T. Hayward, "Methods for Determining How much of a Frozen or Cemented Column of Pipe is Free." Presented at the American Petroleum Institute Mid-year Meeting, Tulsa, Okla., May 16, 1935. **"Drilling and Production Practice, 1935,"** Page 16..
[3] Personal communication.



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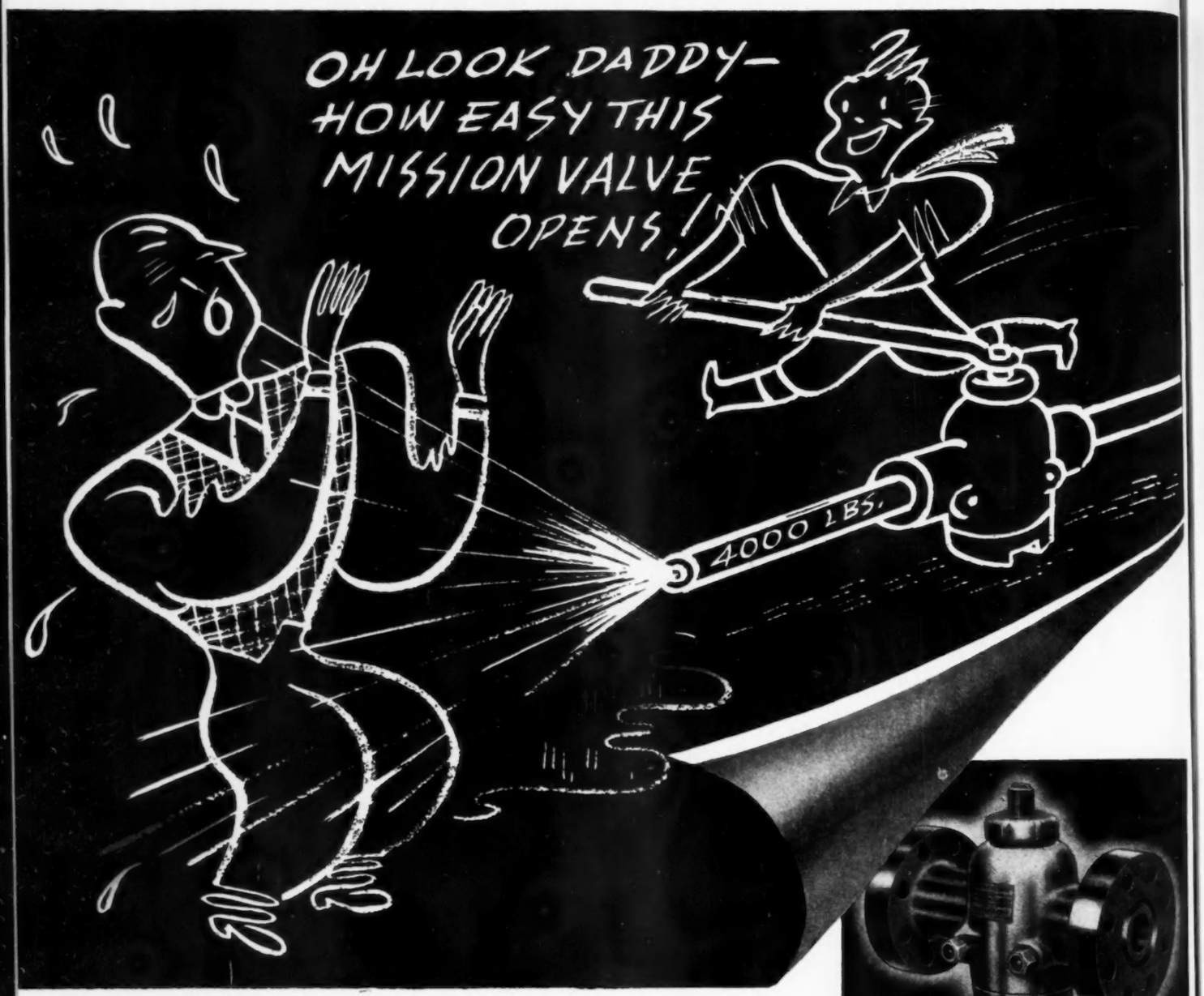

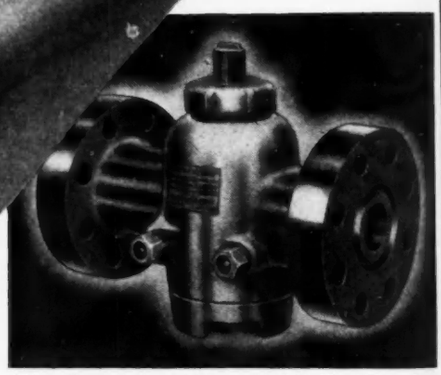

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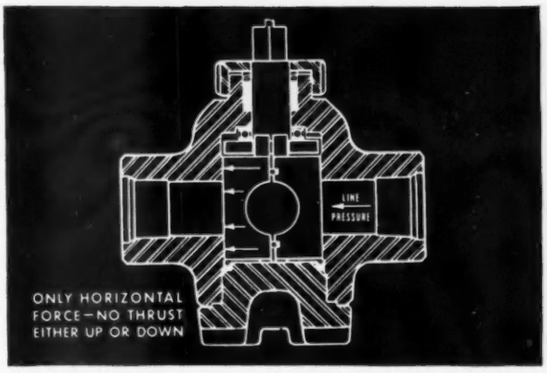

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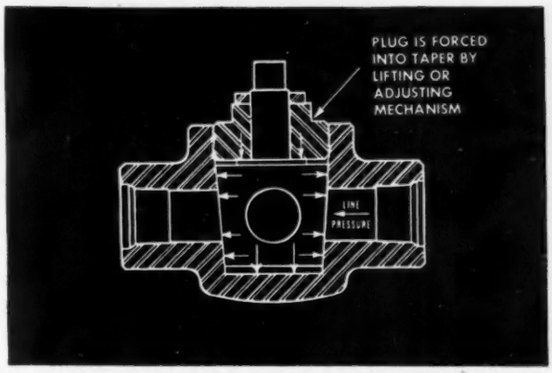

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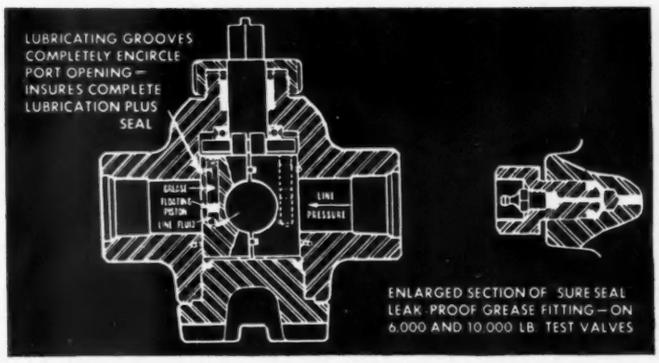
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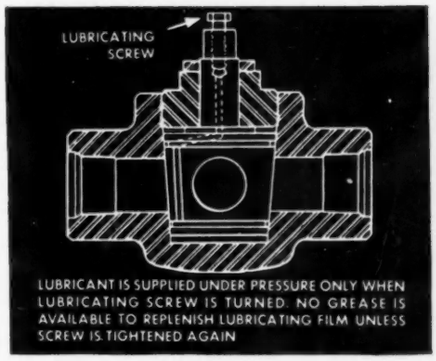
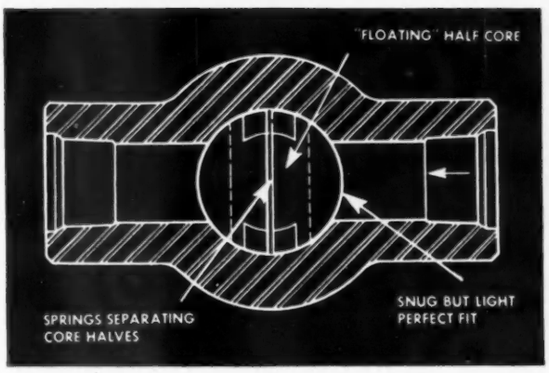
MISSION AUTOMATIC "FULL-PORT" LUBRICATION

Line pressure against piston in lubricating storage reservoir automatically forces and holds sufficient lubricant in place in the grease grooves to both lubricate and form a perfect seal at all times regardless of pressure.


LUBRICATING SCREW
LUBRICANT IS SUPPLIED UNDER PRESSURE ONLY WHEN LUBRICATING SCREW IS TURNED. NO GREASE IS AVAILABLE TO REPLENISH LUBRICATING FILM UNLESS SCREW IS TIGHTENED AGAIN

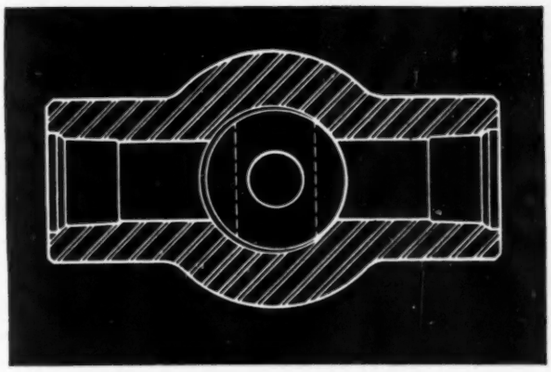
CONVENTIONAL LUBRICATION

Lack of constant pressure to replenish the lubricating film as rapidly as necessary can quickly cause serious damage and leakage.



MISSION SPLIT CORE

Perfect contact with body allows instant seal under pressure. This protects surfaces from sand and grit, reduces cutting and wear, and reduces maintenance costs.



CONVENTIONAL SOLID PLUG

Unless wedged, a solid plug cannot fit its seat perfectly. As the plug wears, it cannot fit. This permits accumulation of sand and grit, accelerating wear, and greatly increases difficulty of operation.

Mission Plug Valves are made with the same careful standards of metallurgical research, manufacturing precision and inspection that have made each Mission product a leader in its field. This valve again emphasizes our long-established policy, "If a product designed by Mission is not proven superior, Mission will not produce it."

Mission Plug Valves are manufactured in 2″, 3″ and 4″ sizes and in three grades—4,000, 6,000 and 10,000 lb. test pressures—and are available or can be ordered from leading oil well supply warehouses. Prices of each style and size compare favorably with those of the best plug valves formerly available. Full details are available on pages 1716 to 1724 of The Oil Weekly Composite Catalog of 1940.

Install Mission Plug Valves under your most difficult operating conditions. They will save you time, labor and money.

MISSION MANUFACTURING CO. · HOUSTON, TEXAS NEW YORK EXPORT OFFICE: 30 ROCKEFELLER PLAZA

pipe is stuck. The procedure is as follows:

1. Determine accurately how much of the pipe is free above the point that is stuck.
2. Make up all the tool joints with the rotary table by varying the tension on the drill pipe. (This is necessary in order to get nearly uniform torque in the make-up of each tool joint.)
3. Pull a measured amount of stretch in the drill pipe so that the neutral point is established just above the point where the drill pipe is frozen.
4. Make the "back out" by rotating the pipe to the left.

If the tool joints have nearly uniform "breaking out" characteristics, the back off will be made very near the neutral point. If the pipe breaks out above the neutral point, it is often possible to get a deeper "back out." Cleaning the lowermost joint with kerosene will assure that the next break will not be in this joint.

Use of Inside Cutters

Inside cutters used in conjunction with small-diameter drill pipe has become increasingly popular where the service is available. The cutter is run on drill pipe small enough to permit its passage through the pipe to be cut. The tool is engaged to the stuck drill pipe by means of slips where a cut is desired. The blades are forced outward against the drill pipe by means of weight. The cut is made by slowly rotating the small drill pipe. Successively higher cuts can be made while the tool is in the hole. Inside cutters and drill pipe are available that will operate in all sizes of drill pipe that have inside measurements equivalent to or greater than 3½-inch external flush drill pipe. Advantages of this method are:

1. The first cut can be made on top of the drill collar and successive cuts at higher intervals allowing maximum recovery of the free portion of pipe.
2. The stuck portion of pipe is cut in sections allowing wash-over and recovery without the necessity of making outside cuts.
3. Circulation can be maintained through the small drill pipe, affording a means of "washing-down" the cutter to the desired depth.
4. The cutter leaves a clean "top" on the pipe left in the hole for washing-over and fishing purposes.

Use of Left-Hand Drill Pipe

Left-hand drill pipe is made with all the screw connections opposite to that of conventional right-hand pipe. The joints are screwed up counter-clockwise. All joints in the tools used with the pipe must be of the same type. An overshot is run on the pipe and engaged to the fish. The procedure used in "backing off" is followed. Since rotating the pipe to the left will make up left-hand pipe the back-off will be made below the overshot. The procedure is repeated until all the pipe is recovered. Stuck portions of the fish may resist backing off and must be washed over before recovery can be made. If left-hand pipe is available, it can be used to advantage on certain types of jobs. Other methods are generally preferable because:

1. The fish may back off in two places and the bottom section drop off while being withdrawn from the hole.
2. Backing off the pipe in a key seat complicates further fishing, as the top of fish left in the hole may be out of the drilled hole.

Recovery By Shooting

Drill pipe is shot off by running a small charge of explosives inside the drill pipe to a point above where the pipe is stuck. The explosive is detonated by means of a time bomb. The smallest bombs are 1¼ inches in diameter. Sufficient tension is pulled in the pipe before detonation so that if the pipe is parted, it can be noted at the surface. In some cases the pipe is not completely parted and it is necessary to finish the separation by twisting it off with rotation. If the pipe is not parted the first attempt it is assumed that the shot was too deep and another trial is made at a higher level. Shooting often is is used when the operator elects to sidetrack the stuck portion of pipe. Shooting off pipe may leave the fish in the hole with a ragged "top" and complicate its recovery by further fishing.

Washing Over Pipe

In order to recover the stuck portion of pipe, it is often necessary to clean out the cavings or cake in the annular space around the pipe. This is accomplished by rotating wash pipe over the fish. Wash pipe is made up of casing which has an outside diameter less than that of the drilled hole and an inside diameter greater than the largest diameter of the fish. The wash pipe assembly is made up in the following manner: A rotary shoe is screwed on the bottom of the wash pipe. This shoe should have an outside diameter of at least ½-inch less than the diameter of the drilled hole. Vertical reaming ribs on the side and teeth on the bottom of the shoe will facilitate its action in recovering cuttings around the stuck fish. Table 1 shows recommended casing sizes for washover pipe for various size holes and the maximum diameter of fish to be washed over. The amount of casing used for wash pipe depends on the length of the fish to be washed over. Five hundred feet of wash pipe is considered the approximate safe limit under ordinary conditions. The wash pipe is swaged to the drill pipe and run in the hole on the drill pipe. After establishing circulation the wash pipe is slowly rotated over the fish. Sufficient pipe should be added to the wash string so that the first connection can be made without pulling off the fish. Minimum weight should be applied and the amount of binding action observed in order to avoid sticking the wash pipe. Safety joints designed for wash pipe are available. These joints have an internal diameter which will allow the use of an inside cutter if the wash pipe becomes stuck.

Use of Outside Cutters

Outside cutters are used in conjunction with wash pipe. The cutter engages the external surface of the stuck drill pipe. The procedure is as follows:

1. The stuck pipe is washed over to insure clearance for the cutter.
2. The wash pipe is withdrawn and a cutter installed in place of the rotary shoe.
3. The cutter is lowered over the fish to the desired level and engaged with the stuck drill pipe by means of slips or fingers. The cut is made by slow ro-

TABLE 1*
Recommended Casing Sizes for Wash Pipe
(Dimensions in Inches)

Size, Hole	FLUSH JOINT CASING		COLLARED CASING	
	Recommended Size	Max. Allowable O.D. of Fish	Recommended Size	Max. Allowable O.D. of Fish
5⅝	4½	3½	5½	4⅜
6¾	5¾	4½	5¾ & 6	4½ & 4⅞
7⅞	6¾ & 7	5¼ & 5⅞	7	5⅞
8¾	7⅝	6¼	7⅝	6½
9⅞	8⅝ & 9	7⅛ & 7½	9	7⅝
11	9⅝	8	10	8¾
12¼	10¾	9⅜	....	....

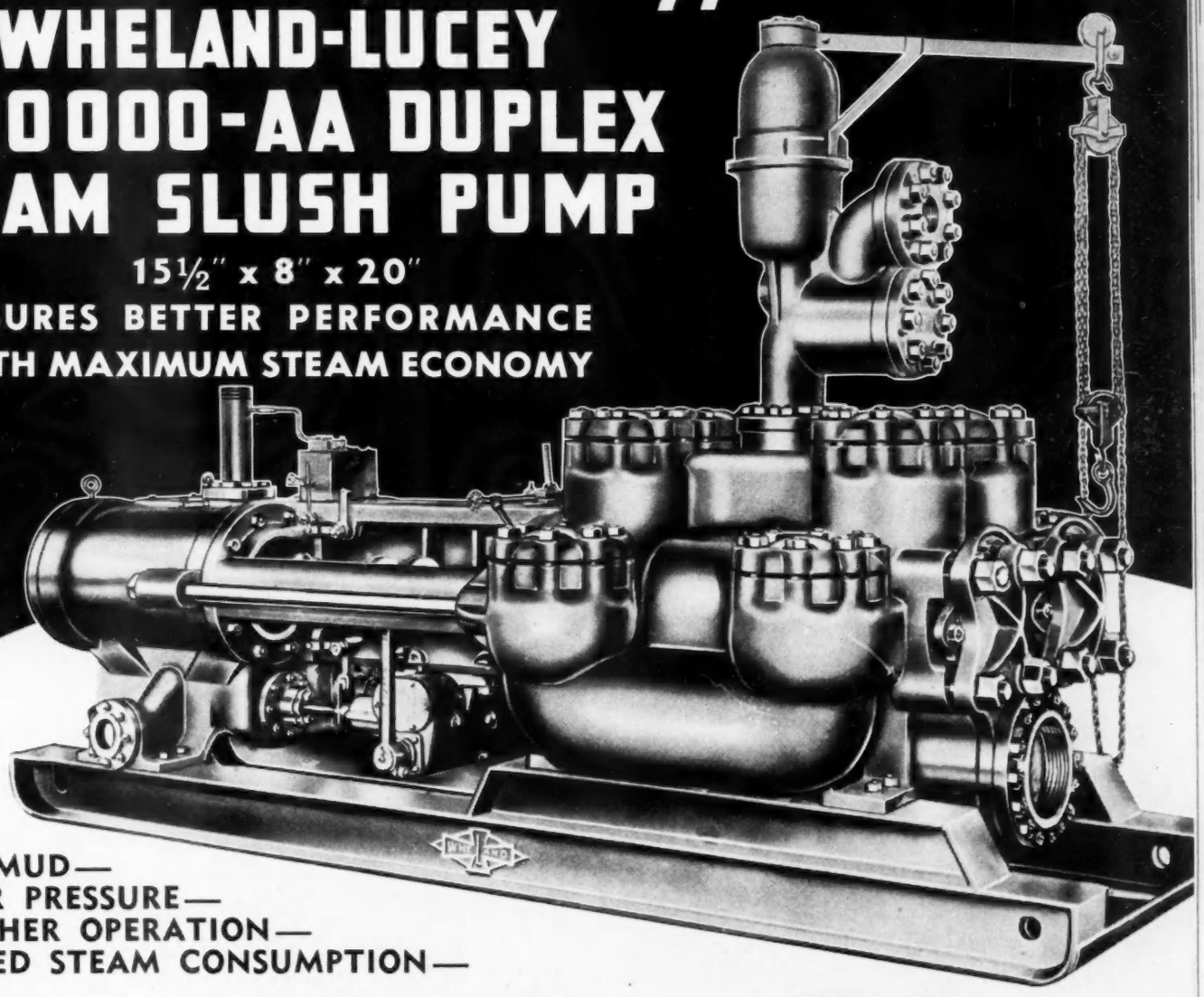
*Table 1 shows casing sizes for various sizes of holes and the maximum outside diameters of the fish that can be washed over. The recommended dimensions are considered safe, but may be exceeded under certain conditions.

Because it's Different—

The WHELAND-LUCEY H-20000-AA DUPLEX STEAM SLUSH PUMP

15½" x 8" x 20"

INSURES BETTER PERFORMANCE WITH MAXIMUM STEAM ECONOMY



MORE MUD—
HIGHER PRESSURE—
SMOOTHER OPERATION—
REDUCED STEAM CONSUMPTION—

Combined steam and exhaust valves are located below the steam cylinders. The exhaust steam will blow out the condensate before leaving the cylinder, resulting in automatic self draining of steam end, improved cushion, improved thermal efficiency, increased mean effective steam pressure, and elimination of broken rings and cylinder heads.

Rocker shafts mounted on ball bearings. Rocker shafts and valve link motion fully inclosed and operate in oil. Improved construction of fluid cylinder head and liner retainer.

All liner adjusting screws are on the outside of cylinder, no screw or threads are in the mud stream. Cylinder head packed by independent gland.

DISTRIBUTORS:

Lucey Products Corporation, Tulsa, Oklahoma
Houston Oil Field Material Co., Inc., Houston, Texas
Murray-Brooks Hardware Co., Ltd., Lake Charles, Louisiana
Frick-Reid Supply Corporation, Tulsa, Oklahoma

STEAM END

Steam Cylinder, Bore x Stroke	15½" x 20"
Maximum Steam Pressure	350 lbs.
Steam Cylinder Hydrostatically tested	700 lbs.

FLUID END

Fluid Cylinder Max. liner bore	8"
Max. recommended working pressure	3000 lbs.
Discharge Ports Hydrostatically tested	4000 lbs.
Suction Ports Hydrostatically tested	2000 lbs.

FLUID VALVES

Wheland patented Rubber Sealed, Cushioning Fluid Valves, with Hardened and Ground Beveled Seats are standard.

Net weight: Complete Pump only . . . . . 21700 lbs.

EXPORT: Lucey Export Corporation, 3505 Woolworth Building, New York, N. Y.; Broad Street House, London, E. C. 2, England

THE WHELAND COMPANY

ROTARY DRILLING EQUIPMENT

Chattanooga, Tenn.

TABLE 2

Multiplying Factors*

These factors multiplied by the stretch in inches equals the length of free pipe in the hole.

Outside Diameter of Drill Pipe	Weight per Foot	†Minimum Yield Point in Pounds Pull	Stress in Pounds Pull on Drill Pipe (Stress Pulled Between Upper and Lower Points)				
			30,000	60,000	90,000	120,000	150,000
3½	11.2	165,876	263.4	132	87.84	66.0	52.78
3½	13.3	199,151	316.4	158.4	105.5	79.27	63.40
4½	16 6	242,409	385	192.8	128.38	96.47	77.15
4½	18.10	273,116	422.5	211.58	140.9	105.9	84.66
5	22.2	325,944	503.5	252.13	167.89	126.16	100.89
5⅛	25.25	369,819	586.2	293.56	195.5	146.9	117.47
6⅝	25.20	358,941	570	285.46	190.08	142.84	114.23
6⅝	31.90	462,273	734.2	367.7	244.85	184.0	147.14

* The multiplying factors calculated by using the plain end area of the pipe; 5 percent was added to take care of the length of tool joints.

† Minimum yield point calculated at 55,000 lb. per sq. in.

tation of the wash string. The cut section of pipe is withdrawn in the wash pipe and the process repeated until all of the stuck pipe is removed from the hole. Each cut should be made at a depth above the preceding wash-over operation. This insures the entrance of the fish into the wash pipe in preparing for the next cut.

Other Methods

Stuck portions of drill stem that can not be washed over can sometimes be recovered by the use of rotary jars. Jars are used in conjunction with an overshot or other gripping tool. They deliver upward impact blows and should be located as near as possible to the fish for maximum effectiveness. Pipe stuck due to being fouled by a metal object or by being crooked often can be freed by jarring.

Side-tracking or abandonment of the hole are the two alternatives if all recovery methods fail.

Hayward's first method for determining the amount of free pipe is based on changing the longitudinal stress and measuring the stretch due to the change. It is suggested that this method be varied by using a predetermined amount of stress in order to simplify its application. The procedure is the same and is briefly reviewed as follows:

1. Fix a base point for measurement that will not be changed by increased load on the derrick.

2. Attach a lathe or strip of paper on the drill pipe so that accurate stretch measurements can be marked from the base point.

3. Pull sufficient tension in the stuck pipe to overcome the weight of the pipe in the hole. Note the weight indicator reading and mark this point on the measuring strip.

4. Pull further tension in the pipe and then slack off to the same weight indicator reading. Mark the measuring strip at this point. The difference between the two marks is accounted for by friction in the sheaves and the pipe in the hole. Draw a line midway between these points and use it as the upper point of measurement.

5. From the table of factors below select the amount of stress in pounds pull that is suitable for the particular job. The stress selected should be converted to the weight indicator scale and added to the reading used in determining the upper mark.

6. Pull the predetermined amount of stress in the pipe and mark the measuring strip.

7. Pull additional tension in the pipe and slack off to the above reading and mark the strip. A line midway between those last two marks is the lower point of measurement.

8. The distance in inches between the upper point and the lower point is the stretch due to the selected stress pulled into the pipe.

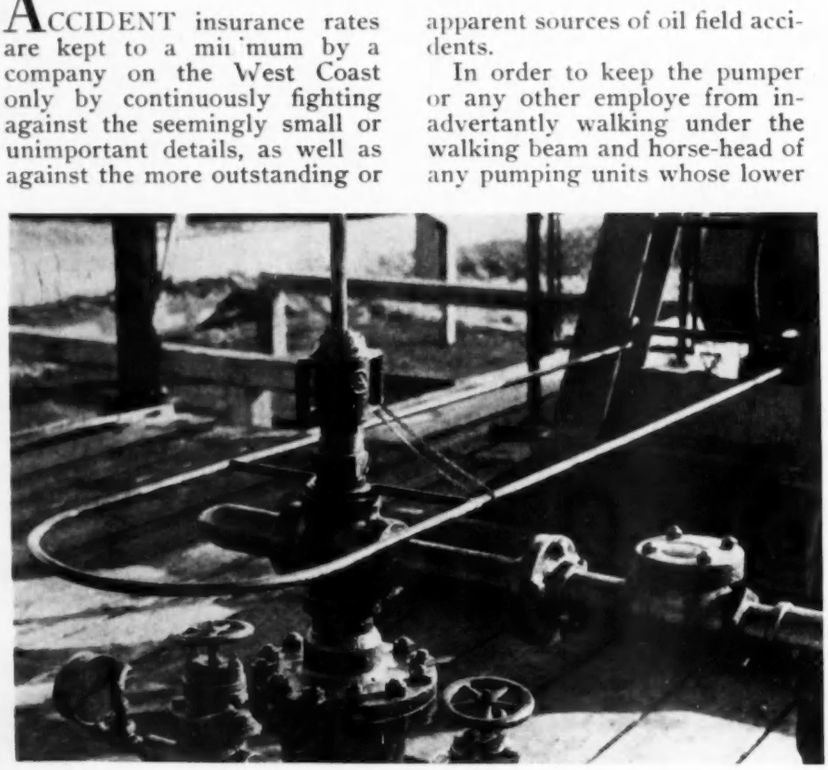
9. Multiply the stretch by the correct factor listed below to arrive at the length of the free portion of pipe in the hole.

10. Table 2 shows the multiplication factors for various weights and sizes of drill pipe.

Guard Keeps Men at Safe Distance From Pumping Well

ACCIDENT insurance rates are kept to a mi mum by a company on the West Coast only by continuously fighting against the seemingly small or unimportant details, as well as against the more outstanding or apparent sources of oil field accidents.

In order to keep the pumper or any other employe from inadvertantly walking under the walking beam and horse-head of any pumping units whose lower extreme of the strokes come down to within five or six feet of the floor, a simple, easily detachable guard rail was installed. The U-shaped guard, made of discarded sucker-rod material consists of but two parts — the U-shaped member and a supporting crossarm, the former having its ends bent into hooks to make it easily attachable to any cross-member of the unit. The other end is supported on the top of the pumping tee by a half-circle loop bent in the middle of the cross-arm.



It is but a minute's work to lift up and remove the entire assembly when it is necessary to work on the well. A guard-rail of this type projecting outward from one to two feet from the moving parts, is particularly valuable when a well is being pumped at a high rate; when some piece of the equipment may fail and injure anyone too close to the well-head.

DRILLING CONTRACTORS' NOTEBOOK

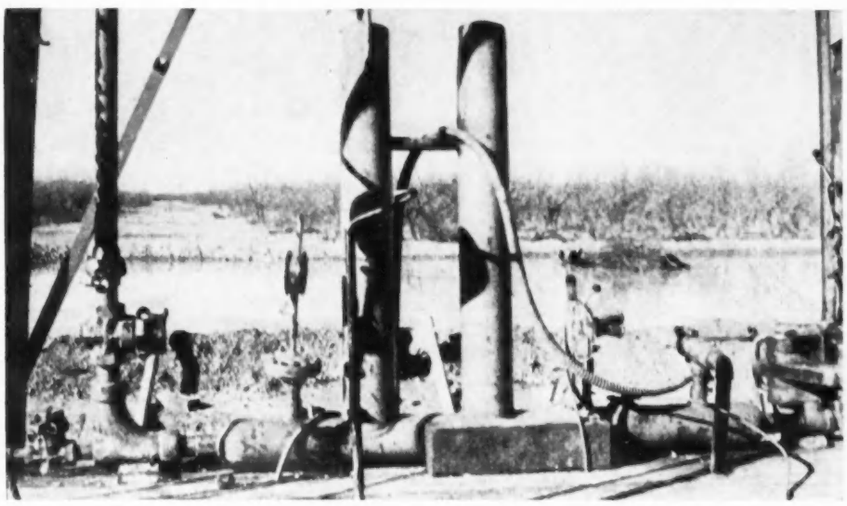
Helpful Suggestions For Those Interested In Drilling Methods

Operating Ideas Maintenance Hints New Rig Hook-ups

Published as a regular feature of THE OIL WEEKLY

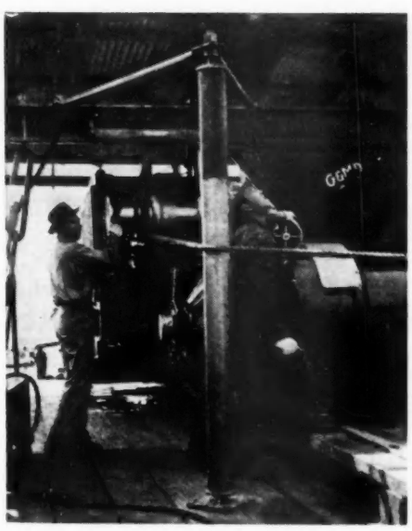
1. RIGGING UP

Air Chambers, Supplied With Fittings, Easily Connected to Mud Line



This set of air chambers on the mud line, equipped with unions on both ends, facilitates rigging up and tearing down.

TO facilitate rigging up, Helmerich & Payne builds air chambers fitted with pipe couplings at either end so they may be assembled quickly. Two chambers are made by welding sections of 5-foot pipe about one foot apart, braced near the top with a short piece of 2-inch pipe. Pressure gauge connections and fittings for the mud pit jet line are attached to the horizontal part of the chamber with couplings for ease in tearing down or rigging up.



This vertical roller, supplemented by an extended cathead, protects the driller from the catline on this rig in Oklahoma's Shawnee pool.

2. SAFETY

Vertical Roller Deflects Line

A VERTICAL roller mounted on the derrick floor of G. & M. Drilling Company's rigs protects the driller from the catline.

An extra cathead is welded to the shaft to provide sufficient clearance between the roller and the driller. The roller is an 8-foot length of 4-inch pipe, welded solid at both ends. It is mounted on a 10x10-inch base plate for secure fastening to the derrick floor. A 2-inch V-shaped pipe is bolted at the upper end of the post to a special steel I-beam on the draw works.

3. RECORDS

Drilling Costs Tabulated

ARROW DRILLING COMPANY, Tulsa, keeps a two-sheet record of rotary drilling costs for each well that gives a 37-item breakdown of direct costs chargeable to each well, a day-record of drilling progress, a record of indirect charges, a daily cost summary and a revenue tabulation.

A division on all cost items for rotary charges and drilling in, the latter done with standard tools on a special unit.

Items on the direct cost sheet are arranged, as far as possible, in the order the charges would be incurred during a drilling operation. A breakdown is provided in engine costs for steam, gas and diesel; in electric motor costs for draw works and slush pumps; in electric generator costs for gas-electric units and steam turbines, and in pump costs for steam slush, power slush and boiler feed. Fishing expense, apt to occur at any stage, is the last item.

The progress record lists the starting date, days used in rigging up and setting surface casing, in cementing and waiting on cement, in actual drilling, in coring, in day work, in time lost with no crews out, in time lost for trouble and repairs, in tearing down, and the finishing date.

Indirect charges entered include drill pipe charges, with a breakdown for 6⅝-, 4½- and 3½-inch

pipe; rig depreciation; overhead, with a breakdown for district, general field and administrative expense, and social security payroll taxes.

The record also calls for information on contract depth, depth drilled, footage drilled by both rotary and during drilling in, casing run, cones used, cores taken and usual conditions encountered.

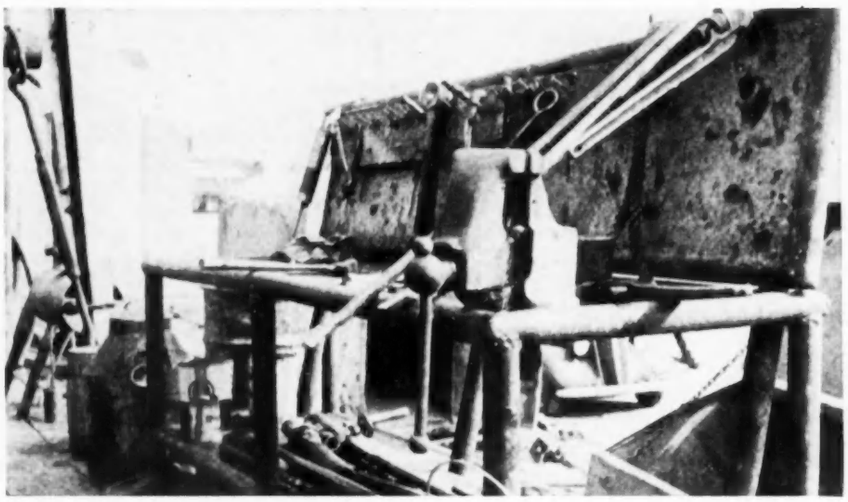
4. TRANSPORTATION

Bench Back May Be Removed

A HEAVY steel back for the derrick workbench affords a place to display tools for quick access, but if rigidly attached it adds to the difficulty of transporting the bench when changing locations.

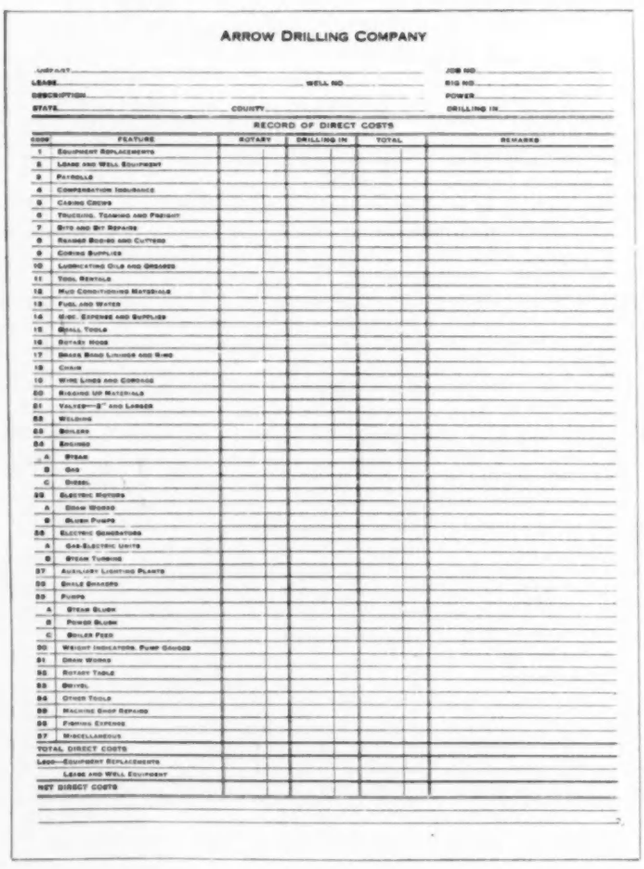
One driller mounts the back of the bench on three pins, spaced to fit sockets of two-inch pipe welded inside the frame of the bench itself. To transport, the back is simply lifted until the pins disengage their sockets. The back may be laid flat or stood alongside the bench, requiring but little additional space.

Rigidly supporting the back in this manner eliminates the possibility of accidental injury by the back "folding up" while being used.



Pins that set in sockets on the derrick work bench support this back, making it easily detachable for transport.

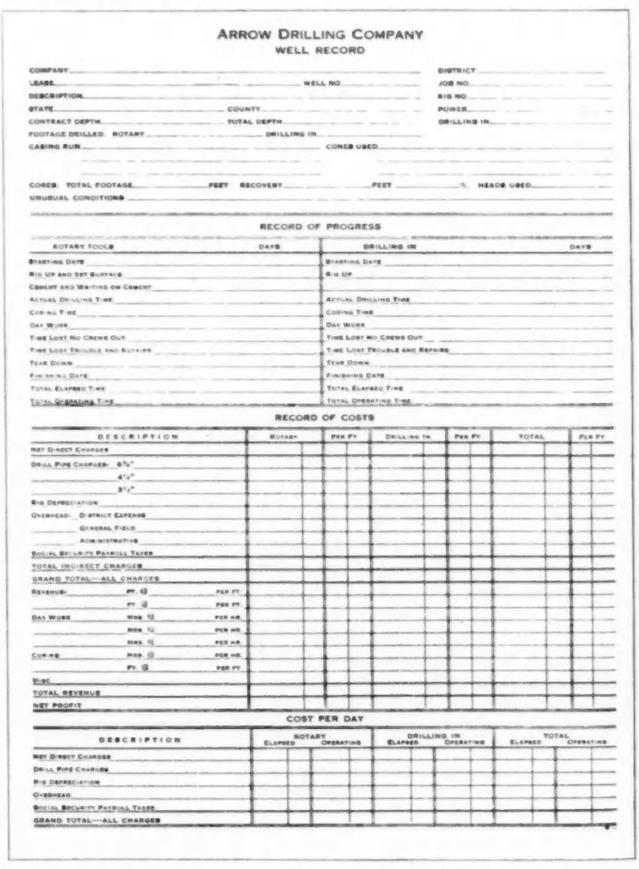
These two sheets provide a detailed cost record of a drilling operation. They measure 8½ x 11 inches, and are punched for filing in a loose-leaf book.



ARROW DRILLING COMPANY

RECORD OF DIRECT COSTS

CODE	FEATURE	ROTARY	DRILLING IN	TOTAL	REMARKS
1	Equipment Replacements				
5	Lease and Well Equipment				
9	Payrolls				
4	Compensation Insurance				
9	Casing Crews				
6	Trucking, Teaming and Freight				
7	Site and Pit Repairs				
8	Reamer Blades and Cutters				
9	Coring Supplies				
10	Lubricating Oils and Greases				
11	Tool Rentals				
12	Mud Conditioning Materials				
13	Fuel and Water				
14	Misc. Expense and Supplies				
15	Bevel Tools				
16	Rotary Hose				
17	Brake Band Lining and Rod				
18	Chain				
19	Wire Lines and Cordage				
20	Rigging Up Materials				
21	Valves—8" and Larger				
22	Welding				
23	Boilers				
24	Engines				
A	Steam				
B	Gas				
C	Diesel				
25	Electric Motors				
A	Drum Hoists				
B	Mudd Pumps				
26	Electric Generators				
A	Gas-Electric Units				
B	Steam Turbine				
27	Auxiliary Lighting Plants				
28	Drill Shacks				
29	Pumps				
A	Steam Slush				
B	Power Slush				
C	Boiler Feed				
30	Weight Indicator, Pump Gauges				
31	Drum Worms				
32	Rotary Table				
33	Swivel				
34	Other Tools				
35	Machine Shop Repairs				
36	Fishing Expense				
37	Miscellaneous				
	TOTAL DIRECT COSTS				
1-100	Equipment Replacements				
	Lease and Well Equipment				
	NET DIRECT COSTS				



ARROW DRILLING COMPANY
WELL RECORD

RECORD OF PROGRESS

ROTARY TOOLS	DAYS	DRILLING IN	DAYS
Starting Date		Starting Date	
Rig Up and Set Surface		Rig Up	
Cement and Waiting on Cement			
Actual Drilling Time		Actual Drilling Time	
Coring Time		Coring Time	
Day Work		Day Work	
Time Lost No Crews Out		Time Lost No Crews Out	
Time Lost Trouble and Repairs		Time Lost Trouble and Repairs	
Tear Down		Tear Down	
Finishing Date		Finishing Date	
Total Elapsed Time		Total Elapsed Time	
Total Operating Time		Total Operating Time	

RECORD OF COSTS

DESCRIPTION	ROTARY	PER FT.	DRILLING IN	PER FT.	TOTAL	PER FT.
Net Direct Charges						
Drill Pipe Charges 6¾"						
4½"						
3½"						
Rig Depreciation						
Overhead: District Expense						
General Field						
Administrative						
Social Security Payroll Taxes						
TOTAL INDIRECT CHARGES						
GRAND TOTAL—ALL CHARGES						
Revenue: Pr. @		per ft.				
Pr. @		per ft.				
Day Work: Hrs. @		per hr.				
Hrs. @		per hr.				
Hrs. @		per hr.				
Coring: Hrs. @		per hr.				
Pr. @		per ft.				
Misc.						
TOTAL REVENUE						
NET PROFIT						

COST PER DAY

DESCRIPTION	ROTARY Elapsed	ROTARY Operating	DRILLING IN Elapsed	DRILLING IN Operating	TOTAL Elapsed	TOTAL Operating
Net Direct Charges						
Drill Pipe Charges						
Rig Depreciation						
Overhead						
Social Security Payroll Taxes						
GRAND TOTAL—ALL CHARGES						

HIGHLIGHTS IN THE WEEK'S NEWS

Courts

Two more oil suits prepared by Department of Justice

Two new suits against the oil industry were reported last week to be in course of preparation in the Department of Justice, one awaiting only issuance of a favorable opinion in the Madison case by the United States Supreme Court.

Meeting just prior to its monthly two-week recess April 8, the court failed to deliver any opinions and set back department plans at least two weeks, since the next decision day will be April 22.

The Madison case was argued before the court February 5 and the delay in handing down an opinion indicates the court is having difficulty in deciding the issues. It had been before the court before, but was not the subject of a formal opinion, the court dividing four-to-four, and reconsideration was asked by the government following the appointment of former Attorney General Frank Murphy to fill a vacancy on the bench.

Dependent upon the decision in the Madison case, it is said, is the long-rumored "East Coast" case, involving much the same issues as in the Wisconsin suit. A favorable decision by the court, it was said, would be considered a "green light" to go ahead with the new prosecution which might involve conditions all along the Atlantic and possibly the Gulf coasts.

The other case said to be under consideration is a further test of the status of patent agreements involving the cracking process. The basic questions involved are described as differing from those in the Ethyl gasoline case, recently won by the government, and are whether patent holders can keep on pooling similar patents so as to avoid expiration and retain virtually perpetual control of a patented process, and whether there may be violation of the Sherman act through patent pooling which serves to eliminate the competition of potential rivals.

The case is said to be one of the most involved ever undertaken, requiring a study of more than 3000 cracking patents.

Texas seeks three-judge court study of spacing controversy

A writ of mandamus to compel Federal District Judge Robert J. McMillan, San Antonio, to vacate a preliminary injunction and to convene a three-judge court, as required by Section 266 of the Judicial Code, to pass upon the case brought by Stanolind Oil & Gas Company of Texas, and O. G. Bailey and J. D. Trimble, of Arkansas, to prevent the Texas Railroad Commission from enforcing its orders in connection with a drilling permit in the East Texas field, was asked of the United States Supreme Court April 9 by Texas Assistant Attorney General Edgar W. Cale.

Focal point in the case is validity of the commission's Rule 37, regulating well spacing in the East Texas field, and its authority to grant exceptions to the rule in instances where it finds that additional wells are needed "in the interest of conservation and for the prevention of waste."

In its brief to the Supreme Court, the state's legal department complained that a preliminary injunction granted by Judge McMillan interferes with the commission in its efforts to enforce a conservation program in the East Texas field.

It was explained that the commission granted a permit under Rule 37 on February 23, authorizing W. D. Ambrose, of Fort Worth, to drill and produce 8 additional wells on a 12.19-acre lease in Gregg County. Stanolind Oil & Gas Company, with the two Arkansas operators, filed a complaint in the San Antonio court on March 11 contesting the order and asking an injunction against it.

The case was brought to Washington by the Attorney General on a charge of the commission that it had been given no notice of hearing, although the statute provides specifically that no injunction to restrain the commission in the enforcement of its orders can be issued except after due notice to it of a hearing on the petition.

The brief filed by the state contended that while no temporary injunctive relief was "nominally asked by the plaintiff against the Railroad Commission of Texas, the necessary effect of such injunction would be to restrain the railroad commission in the enforcement and execution of its orders."

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Allowables

Texas commission to study market at April 18 hearing

The market and its affect on the state allowable will be the principal subject before the Texas Railroad Commission during its statewide hearing at Austin, April 18.

Pipe line proration in K-M-A would seem to call for a cut in that area, but it is indicated operators there will complain that if allowables in other sections had been kept on a proper basis, the cut would not have been necessary.

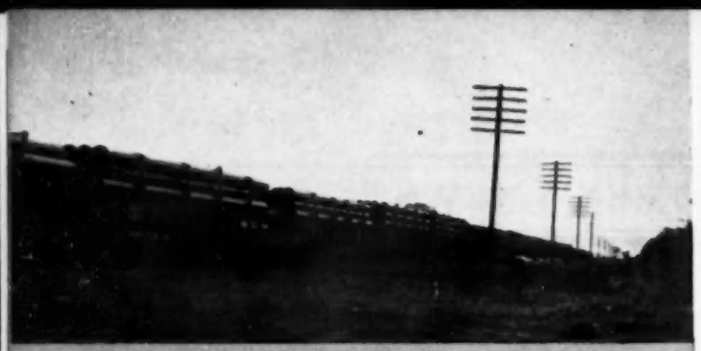
Statements of A. G. White, director of the United States Bureau of Mines, at the Interstate Compact meeting in Oklahoma City April 5 indicated the bureau estimate for May would show no material increase over that for April. If Texas is to produce in line with this estimate, more than 100,000 barrels daily would have to be cut from the state allowable.

Another problem the commission will consider is the prospect of extending the order over a 90-day period. This plan was advocated a year or two ago by Commission Chairman Lon Smith and was tried for a period. At the compact meeting, Commissioner E. O. Thompson announced he would advocate such a plan for Texas beginning on May 1. A day or so later, Commissioner Jerry Sadler approved the plan but said he thought it should not be instituted until June 1. He said the commission was testing several wells and expressed the opinion that 50,000 or 60,000 barrels daily could be cut from the Texas allowable if reductions were made in fields that could not make the allowables assigned.

Mexico

U. S. stiffens attitude in expropriation matter

A perceptible stiffening in the attitude of the United States department towards Mexico's delinquency in rendering indemnification for expropriated oil and other properties was evidenced during the week when Secretary of State Cordell Hull made public contents of a note to the Cardenas government. The note not only rebuked Mexico's delay and attitude toward reimbursement responsibilities, but also made specific suggestions as to how the matter of prompt, adequate and equitable payment should be handled. This is covered in an article on page 54.



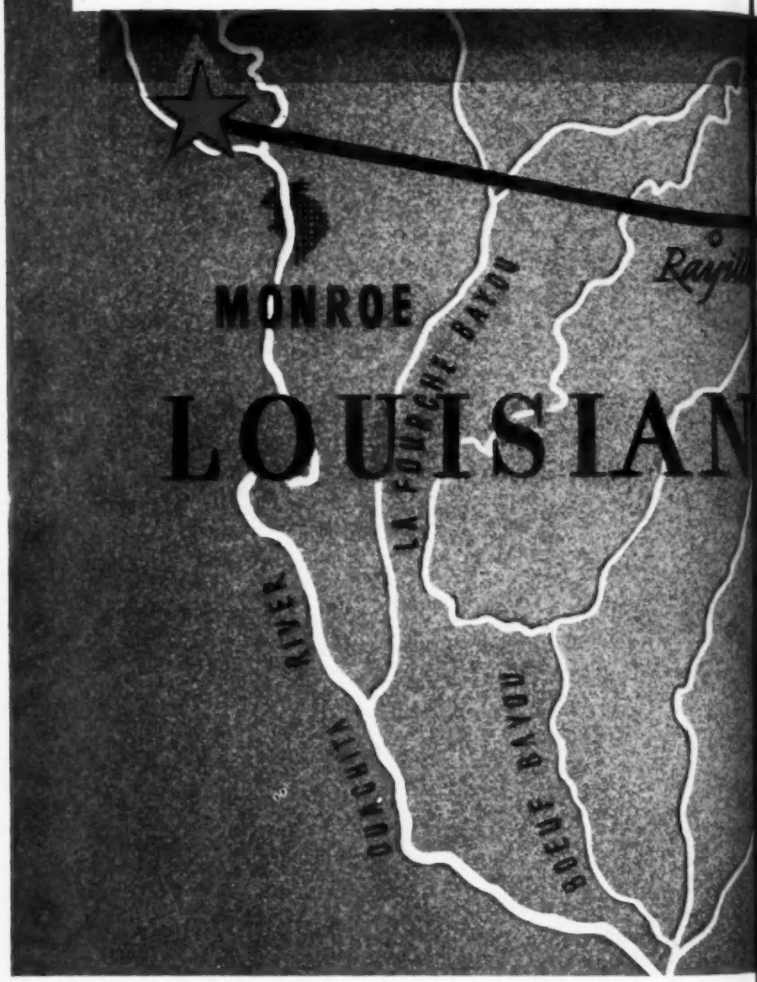
A TRAINLOAD of "Walls Without Welds," enroute to the new United Gas Pipe Line Company project. Delivery schedules were carefully worked out by National engineers, cooperating with executives of the United Gas Pipe Line Company and contractors. Prompt arrival of the pipe on the job was one important factor which aided its speedy completion.

STRINGING THE PIPE. This line was laid in three-joint welded sections, with a coupling between sections. The accurately beveled ends of NATIONAL Seamless materially help welders and couplers produce dependable joints at a rapid rate. Since this line operates at pressures up to 500 pounds per square inch, sound joints are essential.

THE DOPE GANG is here completing the process of coating the pipe to prevent soil corrosion. The smooth, rolled surface of NATIONAL Seamless Pipe is well adapted to the application of protective coatings. Bends like the one shown here were made in the field without difficulty, because the pipe is uniformly strong and ductile.

THE COMPLETED LINE, ready for lowering into the ditch. Started early in October, this project was finished early in December, in about nine weeks' time. All along the line, from delivery until the last pipe section was underground, the uniformly high quality of NATIONAL Seamless Pipe helped speed the job.

175 MORE M...



New Trunk Line for United Gas Pipe Line Company

ALL NATIONAL SEAMLESS

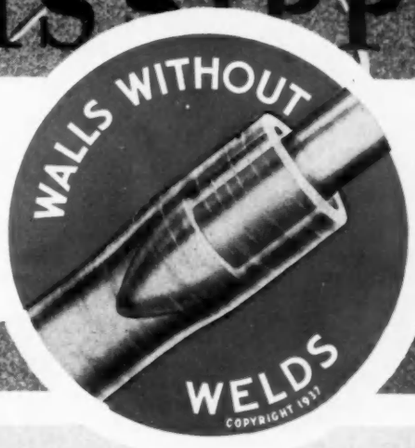
FROM the rich gas fields of Northern Louisiana to the markets of Southern Mississippi, Alabama, Florida, and Louisiana, gas is now flowing through America's newest major pipe line. It is one of the few large-diameter lines to cross the Mississippi River south of St. Louis, and its successful completion proves that even the formidable "Father of Waters" is no bar to gas transmission via pipe line.

The selection of NATIONAL Seamless Pipe for this entire project, including the 123-mile 18-in. O.D. main trunk line from the vicinity of Monroe, La., to a point

MILES OF "Walls without Welds"

ACROSS THE BAYOU COUNTRY

This new gas line follows a strategic route across the low bayous of Louisiana, over the Mississippi near Vicksburg, terminating southeast of Jackson. The entire project is constructed of 175 miles of NATIONAL *Seamless Pipe, sizes as follows: Main line, 18" O.D.; Gathering lines, 4" to 20" O.D.; Highway and Railroad crossings, 22" O.D. casing; River crossings, 10¾", 12¾" and 14" O.D. In all, the line includes twelve major river crossings.*



near Jackson, Miss., as well as gathering lines and casings, is a good indication of the standing of NATIONAL Seamless with pipe line engineers, and industrial men in general. You'll find this pipe used in important lines everywhere.

Good pipe and good service—that's why NATIONAL Seamless Pipe has figured prominently in virtually every important pipe line project of recent years. Don't miss these important advantages.

NATIONAL TUBE COMPANY

PITTSBURGH, PA.

Columbia Steel Company, San Francisco, *Pacific Coast Distributors*
United States Steel Export Company, New York

UNITED STATES STEEL

HERE ARE REASONS WHY NATIONAL SEAMLESS STANDS SO HIGH:

GOOD PIPE

First of all, it's good pipe. NATIONAL Seamless is pierced from solid billets of highest quality steel. It has no welded seam—no line of potential weakness. This pipe gives you uniformly high wall strength—a factor of vital importance in pipe lines designed for high-speed, high-pressure transmission of gas, oil, or gasoline.

GOOD SERVICE

Second, National Tube Company is headquarters for good service. As the world's leading producer of steel pipe and tubes, National can meet your requirements speedily, efficiently, exactly as you desire. No order is too large or too small to receive the same efficient handling. National's engineers have worked with prominent contractors on so many projects under all conceivable conditions that they are able to help you in many ways to keep the job going smoothly.

Geologists Session Stresses Interdependence of Sciences

ARRANGEMENT of annual meetings so more younger geologists may obtain the benefit of technical programs of the American Association of Petroleum Geologists was the only problem mentioned by L. C. Snider, newly elected president, during the organization's twenty-fifth annual meeting held in Chicago last week. He offered no suggestions, but did mention that both the American Petroleum Institute and the American Institute of Mining & Metallurgical Engineers have found it advantageous to select one city for their annual meetings, supplementing them by regional and district meetings.

The new president, who attended the Norman conference that marked formation of the association, took office at the business session Friday morning and complimented the administration of Henry A. Ley by saying that he hoped to have an equally successful administration. His objective in seeking means of increasing the attendance of younger men was to assure that they gain more contact with details of association activities and have the advantage of discussions of technical subjects.

In his annual report, Retiring President Ley mentioned progress on two new geological volumes, one on the Permian and one on stratigraphic traps, while a third on the Appalachian region is under consideration. He called attention to a membership of 3261 on April 1, a growth of 97 in the first quarter of the year. He predicted continued growth.

The annual report of Ed W. Owen, secretary-treasurer, showed net profit of $8000 in 1939, which was explained as coming from such sources that its repetition could not be expected. Owen's budget for 1940 called for expenditures to match income, with a bulletin of 200 pages per month as the chief cost.

Walter A. ver Wiebe, editor, analyzed source and types of manuscripts used in 1939. His office has more manuscripts than in recent years, but he expressed the need of still more contributions.

The report of the business committee, made by Clark Morgan, chairman, mentioned affiliation of the Mississippi Geological Society, a change in the constitution to provide for filling vacancies in the executive committee as well as offices below the president.

Denver and Galveston submitted invitations for the 1941 annual meeting.

Theme of the twenty-fifth annual meeting was the interdependence of the several sciences which make up petroleum geology. In his presidential address opening the convention, Ley said:

"This association began as an idea. Emphasis shifts but the original idea, petroleum geology, still predominates. Regardless of this shift in emphasis, we have one employer, the petroleum industry. We are a part of business enterprise in action."

For the opening session Wednesday morning, both the Society of Exploration Geophysicists and the Society of Economic Paleontologists and Mineralogists met with the American Association of Petroleum Geologists. M. M. Leighton, chief of the Illinois Geological Society, made the address of welcome. Ley responded. E. W. Owen, secretary, eulogized three past presidents, Ralph D. Reed, Donald C. Barton and George C. Matson, who died during the year. Gayle Scott, president of the Society of Economic Paleontologists and Mineralogists, gave his paper, "Ecological Factors Controlling the Distribution of Cretaceous Ammonoids in the Texas Area," on this program.

Technical Program

The technical program that brought together the several sciences which contribute to petroleum geology came Thursday afternoon. F. B. Plummer, Texas Bureau of Economic Geology, Austin, discussed "Water Cones and Water Sheaths in Oil Wells." "Compaction and Flushing Oil Sands" was the subject of F. M. van Tuyl, W. A. Waldschmidt and John Baird, Colorado School of Mines. "The Role of Carbohydrates in the Formation of Oil and Bituminous Coal," was discussed by E. Berl, Carnegie Institute of Technology.

Max W. Ball, Abasand Oils, Ltd., Edmonton, Alberta, Canada, had a paper, "Steps in the Formation of an Oil Feld." "Beach Sediments of Trout Lake Wisconsin," was presented by V. E. McKelvey, University of Wisconsin. Papers by title were "Geophysical Exploration, Soil Analysis with Some Speculation as to the Genesis of Oil and Gas Accumulation," by Eugene McDermott, Geophysical Service, Inc., Dallas, and "An Hypothesis for the Origin of Certain Geochemical Anomalies Associated with Oil Fields," by Ivan J. Fenn, Subterrex, Houston.

Scope of the applications of petroleum geology and its dependence on other sciences was the keynote of the symposium sponsored by the research committee, Wednesday afternoon. A I. Leverson, chairman and Monroe G. Cheney, vice chairman, presided. Levorsen presented a chart to show the trend of geology and petroleum geology as a course of study in major universities. His other presentation was a graph which revealed the growth of the several techniques of geological exploration. Surface studies began in 1910 and reached their peak in 1925. This showed geophysics now on a descending graph. The study of well cuttings is the fastest growing technique used in petroleum geology.

Applications of chemical engineering to petroleum geology was discussed by Paul E. Fitzgerald, Dowell Incorporated, Tulsa, who explained methods of horizontal drilling within a formation as well as methods of perforating casing by chemicals. Both methods require special equipment. He traced the development of chemical applications from the introduction of acidizing through all applications, such as water shut off, gel plugging and control of gas-oil ratios by chemical uses.

The paper by C. V. Millican, Amerada Petroleum Corporation, was read by Roger Dennison. This dealt largely with applications of mechanical engineering to petroleum geology and methods of production.

E. A. Eckhardt, Gulf Research and Development Company, dealt with the partnership between petroleum geology and geophysics. He expressed the opinion that better utilization of results of geophysical prospecting is now more desirable than changes in technique or improvements in equipment, which is expressed as, "let us give better cultivation to the ground already broken."

E. E. Rosaire, Subterrex, Incs., whose subject was "Geochemical Prospecting," said the method was based on the fact that some leakage takes place in any reservoir. The latest use of chemical testing for hydrocarbon content, testing while drilling, he said was capable of indicating accumulation from 500 to 1000 feet ahead of the bit.

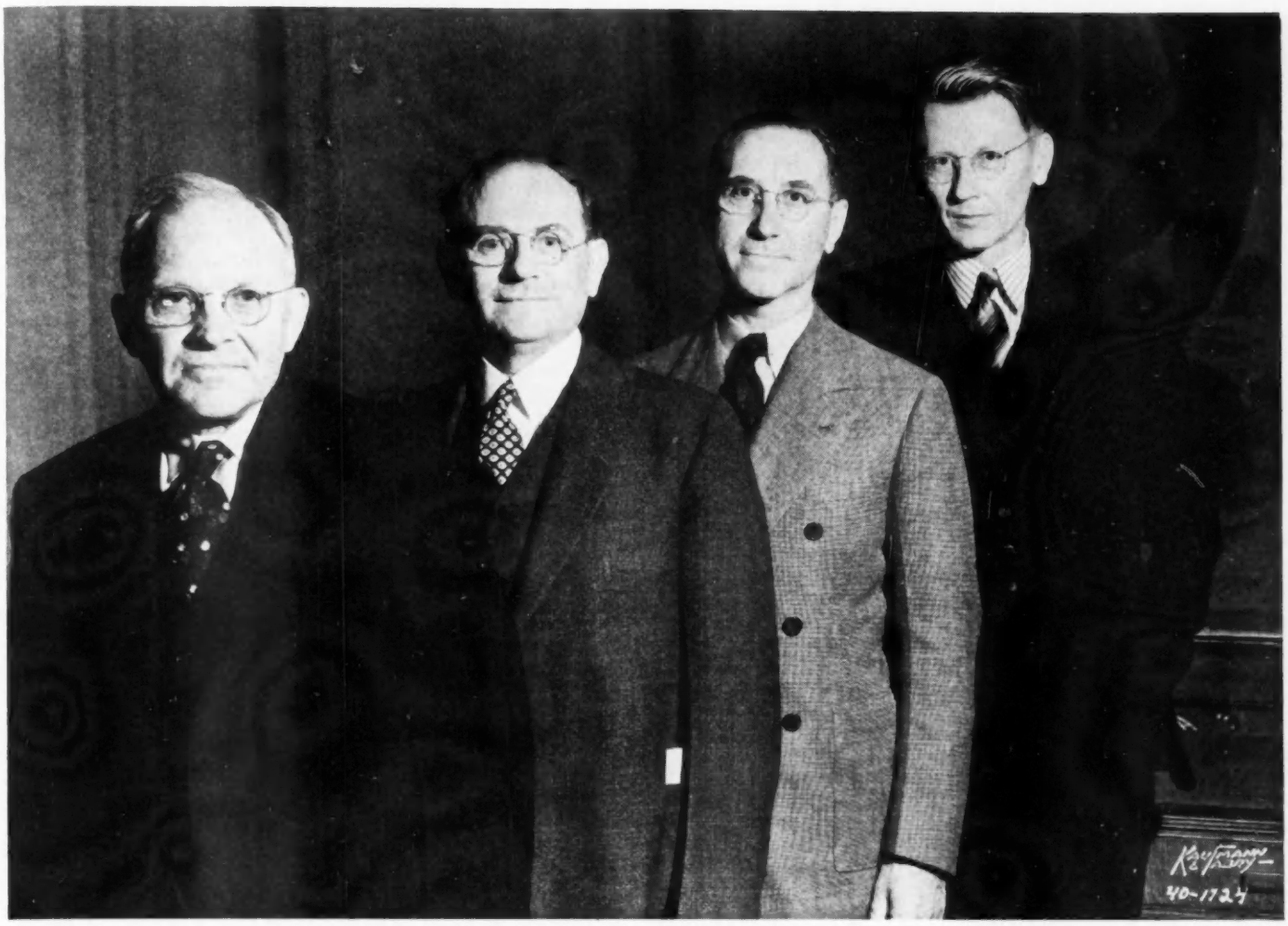
His estimate was that geochemistry promises to aid in answering two questions long in geological study, the history of oil accumulation and the origin of oil itself.

Lack of opportunity for extensive field study for the young geologist in the oil industry was discussed by Frederic H. Lahee, Sun Oil Company. He said petroleum geology had now become such a specialized profession that few field parties are used, with the result that the young geologist has scant opportunity for field experience. He suggested that encouragement of larger staffs for the state surveys was one means of providing field experience for these younger men .

This symposium was completed with a discussion, "Future of Petroleum Geology in the Oil Industry," by E. DeGolyer, DeGolyer, McNaughton and McGhee. His estimate was "geology will continue to be of primary importance in both prospecting and production."

But he pointed out that the geologist is no longer able to make field investigations himself and then draw conclusions from them. Instead he must accept the work of specialists, such as geophysicists, and draw conclusions from what is provided. He classed the profession as demanding speculative geology, with speculation a process of drawing conclusions from facts and not in a financial sense. He classed pros-

Elected to Head American Association of Petroleum Geologists



From left to right—President, L. C. Snider, Cities Service Oil Company, New York; Editor, Walter A. ver Wiebe, University of Wichita, Wichita (re-elected); Vice President, John M. Vetter, Pan American Producing Company, Houston, and Secretary-treasurer, E. W. Owen, L. H. Wentz, San Antonio (re-elected).

pecting as still the foremost geological problem.

Program by Areas

The complete technical program was arranged by areas. That of Thursday morning was on the eastern interior basin, when F. W. DeWolf, University of Illinois, presided. Alfred H. Bell, Illinois Geological Survey, Urbana, discussed "Developments in the Eastern Interior Basin," in which he dealt largely with the Devonian production in Illinois, which he summed up with:

"Thus far all new areas of Devonian production are on structural closures indicated in Mississippian or Pennsylvanian key beds (or both) and furthermore are in areas of previous production from shallower strata. Whether there are structures affecting Devonian but not younger strata and of sufficient size to cause oil accumulation is not yet known."

In his paper, "Review of Structural Discoveries in the Illinois Basin," C. J. Hares, The Ohio Oil Company, reviewed the early work of the last century and brought it down to the work of Bell and others in 1936 and added:

"Some of the scientific discoveries contributed by the oil industry are: (1) the northeast-southwest structural trends which are not, as normally expected, parallel to the northwest-southeast LaSalle anticline, but at an angle of nearly 45 degrees to it; (2) that the new oil fields not only occur on local domes along these trends but some fields have been discovered in almost the very bottom of the structural basin; and (3) the difference in the degree of folding in the Devonian and Mississippian formations as indicated by deep drilling.

P. L. Dana and E. H. Scobey, Gulf Refining Company, offered a cross section of the Chester series in the Illinois basin. In the "Geology and Development of the Loudon Pool," Duane C. Randall, The Carter Oil Company, discussed the type of structure and the drilling and production program which has resulted in 1400 producing wells, with 200 more needed to complete development of the present producing formations.

The abstract of the paper by L. E. Workman, Illinois Geological Survey, "Subsurface Geology of the Devonian in Illinois," had this abstract:

"From its maximum development in southern Illinois, the Devonian thins northward as a result of progressive overlap upon a land mass which was present during Devonian times in central Illinois. Northwest of the land mass only upper Devonian formations are present, thickening to the northwest to a maximum near Rock Island. Structural movements and erosion preceded the deposition of the New Albany black shale. To date oil has been produced from only the upper Devonian weathered dolomitic limestone and porous sandstone.

This area was completed with "Geology of the Nashville Dome," Charles W. Wilson, Jr., Vanderbilt University, and Kendall E. Born, state division of geology, Nashville; "Paleozoic Wells in the Mississippi Embayment in Tennessee," Kendall E. Brown; "Tetonic Map of the North Central United States," C. R. Longwell, Yale University, and Charles H. Behre, Jr., Northwestern University.

Michigan and Appalachian Basins

Thursday afternoon was devoted to consideration of the Michigan and Appalachian basins. R. B. Newcombe, Grand Rapids, outlined the development in Michigan oil fields in 1939. J. B. Maebius, Gulf Refining Company, discussed the Temple field and Freeman-Redding, Clare County, Michigan; "Geology of the Walker Oil Field," was the subject of C. H. Riggs, Michigan Department of Conservation; "Isopachous Studies of the Ellsworth to Traverse Limestone Section of South-

western Michigan," were offered by Margaret Stearns Bishop. The Buckeye field was discussed by Carl C. Addison, The Pure Oil Company, Donald B. MacLachlan, Wayne University, had this subject: "Structure of the Southwestern Ontario and the Thumb of Michigan as Revealed by Late Quarternary Warping."

Discovery of two Oriskany gas pools in Jackson County, West Virginia, and extension of the Elk-Poca field, were reported by Thurman H. Myers, Carnegie Natural Gas Company, who estimated by these had added 60,000,000,000 cubic feet of natural gas but not sufficient to overcome consumption within the area.

"Some Observations Concerning the Sedimentary History of the Central part of the Appalachian Basin," was the subject of Robert C. Lafferty, Owens-Libby-Owens Gas Department; Harold R. Wanless, University of Illinois, discussed "Pennsylvanian Sedimentation in a Part of the Southern Appalachian Coal Fields."

The paper of Lucille Hale, Department of Conservation, Lansing, Michigan, "A Study of the Sedimentation and Stratigraphy of the Lower Mississippian in Western Michigan," was read by title.

Mid-Continent and Mountain Area

Consideration of Mid-Continent and Rocky Mountain regions came Friday morning. Development in Missouri and Nebraska was part of the report of Edwatd A. Koester, Darby Petroleum Corporation, which his abstract summarized as:

"Missouri received a major share of the drilling phase in the Forest City basin play, which was one of the most active in the United States in 1939. Twenty-two deep wildcats and many shallow Pennsylvanian tests were drilled without success except for a few marginal gas wells in old areas. Most of the wildcats tested all possible producing formations in the Arbuckle group. Not all activity was confined to the Forest City basin as several wells were drilled in central and northeastern Missouri. Inasmuch as over half the wells drilled were located on some type of surface structure, the failure of even one test to find a showing of free oil in pre-Pennsylvanian rocks confirms the opinion of those geologists who refused to be stampeded by the hysteria of the Forest City play.

"Six dry holes were completed in Nebraska in 1939, none of which was in the Forest City basin. Three reached pre-Cambrian rocks, one quit in Arbuckle dolomite and the two others were abandoned as incomplete tests. The Pawnee Royalty Company No. 1 Boice in 18-1n-16e, Richardson County, will probably be considered the discovery well of Nebraska, although at present it has not been successfully completed as a commercial producer."

Lewis W. MacNaughton, Dallas, reviewed development of the south Mid-Continent area. "Structure of the Western Part of the Ouachita Mountains," was the subject of Thomas A. Hendricks, United States Geological Survey. "Structural History of the Billings Field Interpreted in Terms of Isostasy," was the subject of Malvin G. Hoffman, Midco Oil Corporation. Glenn G. Bartle, University of Kansas City, and Rufus M. Smith, Panhandle-Eastern Pipe Line Company combined their work in "The Relative Porosity and Permeability of the Producing Formations of the Hugoton Field as Indicated by Gas Withdrawals and Pressure Declines."

"Developments in the Rocky Mountain Region in 1939" was offered by C. E. Dobbin, United States Geological Survey. W. O. Thompson, University of Colorado, and J. M. Kirby, The California Company, offered "Permo-Pennsylvanian Stratigraphy Between Colorado Springs and the Black Hills." "Principles of Oil Accumulation in the Cut Bank District," was outlined by C. E. Erdmann, United States Geological Survey. E. B. Branson, University of Missouri, and C. C. Branson, Brown University, gave a joint paper, "Stratigraphy and Structures of the Wind River Mountains of Wyoming." "The Structure of South Park, Colorado," was presented by J. T. Stark, W. E. Powers, A. L. Howland and C. H. Behre, Jr., Northwestern University, C. B. Gould, Colorado College, and J. H. Johnson, Colorado School of Mines.

Papers Read by Title

Papers by title were:

"Developments in North and West Central Texas, 1939," Karl A. Mygdal, The Pure Oil Company.

"Additional Information on the Simpson Group in Oklahoma," Charles E. Decker, University of Oklahoma.

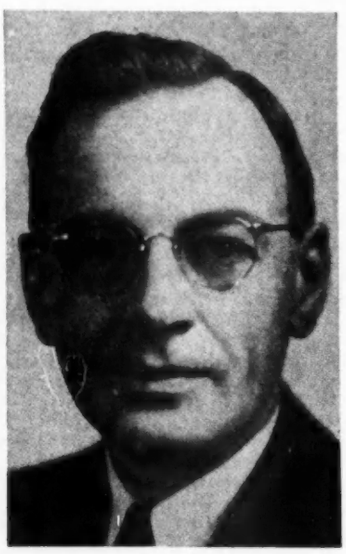
"The San Andres Group in Oklahoma and Adjacent Areas," R. L. Clifton, Champlin Refining Company.

"The Fletcher Member of Salado Formation," W. B. Land, United States Geological Survey.

"Marine Limestone in the Fountain Formation (Pennsylvanian) near Colorado Springs, Colorado," Chalmer J. Roy, Louisiana State University.

"Geology of the Lampasas Inlier of Paleozoic Rocks in Central Texas, F. B. Plummer and B. F. Grant, Bureau of Economic Geology, Austin.

New President S.E.G.



W. T. BORN

S.E.G. speakers stress growing importance of paleontology

At the symposium of the research committee of the American Association of Petroleum Geologists in Chicago last Wednesday afternoon, A. I. Leverson, chairman, pointed out that micropaleontology is the branch of science which shows steady growth as a part of petroleum geology. Later in the same program E. DeGolyer said it was the science due to have longer use than any other that petroleum geology uses.

The scientific program of the Society of Economic Paleontologists and Mineralogists was restricted to Wednesday and Thursday. A business session was held Friday morning.

Officers elected include:

President, Carey Cranies, University of Chicago, Chicago.

Vice president, John R. Sandidge, Magnolia Petroleum Company, San Antonio, Texas.

Secretary-treasurer, H. B. Stenzel, Bureau of Economic Geology, University of Texas, Austin.

Editor, Norman D. Newell, University of Wisconsin, Madison.

Born elected to head geophysicists society

For its tenth annual meeting in Chicago April 10 and 11, the Society of Exploration Geophysicists gave attention to the history of the science and its relation to the petroleum industry in addition to its technical program.

James B. Macelwane, director of the geophysicists department of St. Louis University, traced this history for the past 15 years. B. B. Weatherby, Geophysical Research Corporation, gave a history of the development of seismic prospecting. The history of gravity method of prospecting was given by E. A. Eckhardt, Gulf Research and Development Company.

Donald C. Barton, one of the organizers of the association, was given the posthumous distinction of honorary member.

Two members of the geophysics society were on the joint program of the American Association of Petroleum Geologists for the research committee symposium, Wednesday afternoon. E. A. Eckhardt outlined the relation of geophysics to petroleum geology. E. E. Rosaire discussed geochemical prospecting.

Officials elected by the Society of Exploration Geophysicists include:

President, W. T. Born, Geophysical Research Corporation, Tulsa.

Vice president, H. B. Peacock, Geophysical Service, Inc., Houston.

Secretary-treasurer, Andrew Gilmore, Amerada Petroleum Corporation, Tulsa.

Editor, R. D. Wyckoff, Gulf Research Corporation, Pittsburgh.

Pickens is name given new Mississippi area

The nomenclature committee of the Mississippi Geological Society has given the name Pickens to the producing area recently opened by Kingwood Oil Company's Mrs. R. E. Wilburn, northeastern Yazoo County.

Rainy Days are here Again

PROPERTY DETERIORATION

must be Checked

See Our Exhibit at the INTERNATIONAL PETROLEUM EXPOSITION TULSA MAY. 18-25

SPRING rains are a forerunner of property damage . . . when unchecked dampness brings costly decay and deterioration.

But whether it's moisture, mildew or blistering summer sun that attacks your property investment, **CSCO** Paint will give you money-saving protection. Especially compounded for varying climatic conditions of the oil industry, there's a special **CSCO** Paint for every oil field surface.

Specify **CSCO** Paint on your next purchase requisition . . . its top quality ingredients are your assurance of lasting protection. Complete stocks at all Continental stores.

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CONTINENTAL

Eastern A.P.I. Chapter Covers Variety of Technical Subjects

OUTSTANDING among advancements achieved in recent years in practical production and drilling practices of the industry has been the general trend toward numerous phases entirely undreamed of a short time ago. This trend toward diversification of operating technique to meet each particular difficulty of the production man has resulted in the introduction of many new procedures and tools that have advanced practical field operations to an exceptionally high place in comparison with methods employed previously.

Extension of production activities into such widespread fields and the numerous advancements attained were never more ably expressed than at the Eastern District meeting of the American Petroleum Institute's Division of Production in Columbus, Ohio, last week. The program presented at the meeting probably was the most diversified in the history of the institute, and naturally brought out a large attendance. Topics discussed by speakers ranged from cable tool to rotary drilling, water flooding, field compressor plants, oil well pumping, multiple-sand completions, rejuvenation of stripper wells, mud and cementing troubles, to such subjects as appraisal work, lubrication of equipment, geology, field developments and refining improvements. Each paper outlined practical operating advancements that enable the industry to whip problems that have long been troublesome and expensive, and indicated that additional progress is to be anticipated in the future.

Although mother nature did a very unsatisfactory job of combining hydrocarbons in crude petroleum, technologists have been able to develop several processes that permit improvement of natural low-grade fuels into fuels of high quality. In this respect, Dr. Gustav Egloff, research director for Universal Oil Products Company, Chicago, declared the United States was far ahead of any other nation and predicted vast future progress in values, both as to yields and qualities.

Egloff briefly outlined recent changes in refining processes that have made it possible for concerns in the United States to take natural crudes with octane ratings ranging from 30 to 60 and convert them into fuels with from 75 to 115 octane, as well as obtaining greater yields per barrel and using previously wasted by-products. He explained how nations such as Germany, Russia, Italy, France and England were using gas obtained from wood and coal for operation of many motor cars and trucks, and that such fuels could not approach octane ratings obtained in the United States.

Consequently, he concluded, the United States has cars and airplanes with greater speeds, load capacities and maneuverability than have other nations; describing this one of the country's most important military advantages.

J. J. Schmidt, East Ohio Gas Company, Cleveland, was elected chairman of the Eastern District for the ensuing year. He succeeds Dewitt T. Ring, Preston Oil Company, Columbus, who was named chairman of the advisory committee.

Five vice chairmen were elected, as follows: M. G. Gulley, Gulf Oil Corporation, Pittsburgh; I. W. Hartman, Gordon Oil Company, Mt. Pleasant, Michigan; T. H. Myers, Carnegie Natural Gas Company, Pittsburgh; O. W. Van Petten, Columbian Carbon Company, Charleston, West Virginia; W. A. Watkins, The Carter Oil Company, Mattoon, Illinois.

W. E. Ferguson, The Ohio Fuel Gas Company, Columbus, succeeds J. W. Hartman as secretary-treasurer.

Members of the new advisory board, besides Chairman Ring, are J. C. Askam, The Ohio Oil Company, Findlay; H. D. Atha, Gordon Oil Company, Mt. Pleasant; A. H. Bell, Illinois State Geological Survey, Urbana; F. A. Benckert, Peoples Natural Gas Company, Pittsburgh; S. J. Brendel, S. J. Brendel Oil & Gas, Inc., Pittsburgh; F. M. Brewster, Belmont Quadrangle Drilling Corporation, Bradford; E. F. Clagett, The Pure Oil Company, Saginaw; P. H. Curry, South Penn Oil Company, Pittsburgh; Forest D. Dorn, Forest Oil Corporation, Bradford; F. E. Eckert, Hanley & Bird, Bradford; K. C. Heald, Gulf Oil Corporation, Pittsburgh; M. R. Joy, Cities Service Oil Company, Mt. Pleasant; D. S. Keenan, Carnegie Natural Gas Company, Pittsburgh; R. B. Kelly, The Pure Oil Company, Olney; W. C. Kneale, The Texas Company, Centralia; Alex McCandless, Nahutska Oil Company, Robinson, Illinois; W. L. McCloy, Ohio Fuel Gas Company, Columbus; J. G. Montgomery, Jr., United Natural Gas Company, Oil City; J. H. Newlon, Equitable Gas Company, Pittsburgh; E. V. O'Rourke, Ohio State University, Columbus; Christy Payne, Jr., Peoples Natural Gas Company, Pittsburgh; S. J. Pirson, Pennsylvania State College, State College; John Post, Oil Well Supply Company, Oil City; Paul H. Price, West Virginia State Geologist, Morgantown; C. C. Reed, Hope Natural Gas Company, Clarksburg; E. G. Robinson, Shell Oil Company, St. Louis; J. French Robinson, Peoples Natural Gas Company, Pittsburgh; Frank Schauer, Equitable Gas Company, Pittsburgh; J. J. Schmidt, East Ohio Gas Company, Cleveland; E. N. Smith, Natural Supply Company, Pittsburgh, and Don Wilson, Columbia Oil & Gas Corporation, New York.

Abstracts of some of the papers presented at the meeting follow:

Chairman Eastern A.P.I.

J. J. SCHMIDT

Review of Illinois Practices and Procedures

By E. D. SHAKELY *and* HOLMES MILLER
Exploitation Engineers
Shell Oil Company, Inc.,
Centralia, Illinois

As a result of expanded drilling operation, and particularly exploitation of deeper producing horizons, improved operating practices have been introduced in Illinois.

Rotary drilling continues as the favored method, and much advancement has been made in unitizing the various pieces of equipment. While regular rotary rigs are in the majority, some units include portable masts, and slim-hole drilling units with drawworks, mud pump, mast and prime mover mounted on trucks are being used successfully to depths of 2000 feet.

Directional drilling is now being applied successfully to the relatively hard formations encountered in comparatively shallow Illinois wells. Part of the Salem field is overlain by an artificial lake. To avoid the possibility of contaminating the water and also to eliminate expensive substructures, one operator is drilling directional holes to exploit reserves underlying the lake. A vertical hole is carried to 500 feet, below which point, from 4 to 12 removable oriented whipstocks are run at intervals to obtain the desired angle of deflection which may be as much as 20° degrees. It

has been possible to deflect the bottom of the hole laterally from 100 to 400 feet.

Proper care of drilling mud has become more important to Illinois operators, especially at Salem. Between the McClosky and Devonian producing beds are highly permeable zones that "thief" the drilling fluid. To protect the shallow producing beds and avoid losing returns, such substances as Bentonitic clay, cotton seed hulls, cane fiber and cellophane flakes are being used. An effort is made to maintain the mud weight at 9¾ pounds per gallon and a viscosity of 43 seconds.

Much improvement has been made in cementing procedures. By mixing small percentages of Bentonitic clay with the cement, coupled with a water ratio of about 7½ gallons per sack, channeling has been reduced, also pumping pressures are lowered, thus safeguarding the thin-walled casing in common usage. Laboratory tests indicate that addition of Bentonitic clay does not appreciably reduce the compression of the bonding strength of the cement. Addition of Bentonitic clay is believed to give the cement a slight lubricating quality which lessens scouring action.

Several cement schemes have been developed to overcome the highly porous beds between the McClosky and Devonian formations which thief the cement to such an extent complete cement columns cannot be placed opposite shallower beds. Some success has been obtained by cementing the casing in one stage, however, it is not always possible to procure returns. A second method involves multiple-stage cementing, with the tool placed below and above the thief formation. Whenever the two-stage device fails to obtain a water shut-off, a squeeze job may be applied.

Of general interest are: Introduction of a pressure core barrel; a milling tool for removing steel casing; an instrument for determining wave reflections in pumping wells, from which data bottom-hole pressures may be calculated; and improved electrical control devices for pumping equipment.

Multiple Sand Completions

By Bart De Laat
The Pure Oil Company,
Olney, Illinois

Multiple-sand or zone completions, which permit producing from one or more horizons selectively, successively, or simultaneously, into a common well bore, have had widespread application in Illinois Basin fields.

The most simple form of multiple-zone completion practice is to cement the entire casing string, then perforate and produce each zone successively upward, excluding lower zones as they are depleted or invaded by water.

Another method is the removal of steel pipe so as to expose the formation. An effective means is the use of a cutting tool which employs projecting milling cutters expanded by pump pressure applied from the surface. The blades are arranged in tiers in the tool with an internal expanding mandrel so designed that each set of blades can be opened in succession as others become worn.

Another steel pipe removal method, which is in the experimental stage but is thought to offer promise, is the application of certain special solvents whose action is confined to a particular section by special methods or placing or other means. Steel pipe can be reduced to tissue thinness before puncturing takes place, and if the cement behind the pipe continues to confine the solvent, it will be removed entirely.

The development of removable materials fabricated of magnesium and aluminum alloys has been an advent of importance in multiple-well completion. Liners of these alloys are placed in the casing string opposite all possible producing levels. Magnesium-alloy liners can be removed rapidly and economically by circulating about 50 gallons of 15 percent hydrochloric acid per foot past the material, which is usually done through tubing after the well is completed. Aluminum alloys, which are relatively inert in the presence of most corrosive well fluids, may be used for semi-permanent installations. They can be gun perforated with reduced charges, but are usually removed in sections or completely by use of an expanding bit. Both the magnesium and aluminum liners may be removed by shooting. The magnesium liners are shattered readily by light shots and can be removed from the hole in small particles, the aluminum liners require heavier shots and may not break up into small particles.

Water Treatment for the Prevention of Scale and Corrosion in Connection with Water Flooding

By F. T. Redman
Hall Laboratories, Pittsburgh, Pa., and
R. F. Mackie
Consulting Chemist,
Bradford, Pa.

The use of a small quantity of sodium hexametaphosphate has been called "threshold" treatment because it halts the precipitation on the threshold" of crystallization. Several oil field applications involving stabilization of flooding water with hexametaphosphate have been made already. It has been noticed that hexametaphosphate not only has stabilized such water, but there is evidence that corrosion is less severe due to smaller increase in iron content.

It has been found that precipitation of calcium carbonate, calcium sulphate, and iron are eliminated by the use of a concentration of metaphosphate of 2 to 5 PPM, and that this will greatly decrease the amount of corrosion of ferrous metals with which the water comes in contact.

Conservation and Proration Without Allowables

By Roger C. Hutchings
American Petroleum Institute,
New York

It is timely to inquire what the coming years hold for the petroleum industry. The development and growth of the industry, largely by its own efforts, testifies to its ability to progress with opportunity. Left free and unhampered, such an industry can continue to bring greater east of living and greater benefits to every one of us in the years to come.

"It can be done and I can do it," insisted Colonel Drake 83 years ago, as many scorned his attempt to drill for oil. From the determination expressed in those words came a new industry, new jobs, a higher standard of living for the American people.

The future of the petroleum industry is assured if it is permitted to enjoy the rights of Colonel Drake to say "It can be done and I can do it"; if every man enjoys his prorate share of opportunities to make progress; and if the necessity of allowables is not so broadly interpreted as to necessitate that every man must ask another's permission. The new horizons of achievement merely await our ingenuity, self-reliance and determination, and even higher standards of living for a great people will mark the days to come.

Electrification of Pump Equipment in Illinois

By R. E. Hammond
Petroleum Engineer
The Carter Oil Company
St. Elmo, Illinois

Electric pumping of oil wells has assumed a general increasing prominence during recent years, but the current peak for large-scale electrification has been furnished by the modern development of properties in the Illinois basin, many of which possess producing characteristics particularly favorable to the use of electric power.

Even in such fields, however, the success of electrified operation is enhanced by thorough preliminary review of factors effecting the selection and installation of equipment making up the proposed system. A few of the most important of these factors are as follows:

1. Advantages of "high slip" induction motors.
2. Possibilities of time switch control.
3. Location of field substations to permit "looping" and underbuilding of secondary lines.
4. Decreased well service investment when pumping unit is set on side of well toward power line.
5. Danger of overbuilding generating plants and possibility of saving by use of purchased power for excess requirements during temporary peak load period.

After the electric system has been built and placed in operation attention should be given to the following considerations:

1. Power system stabilization through load control and intermittent pumping.
2. Possible advantages of power factor correction.
3. Increased power requirements during cold winter months.

Problems in Deep Cable-Tool Drilling in Appalachian District

By J. A. Fox
Foley & Fox,
Washington, Pennsylvania

There are a host of unsolved problems in connection wtih cable-tool drilling to depths greater than 5000 feet in the Appalachian district. Two of them, however, are particularly important at this time. The problem of improving drilling technique to achieve a longer working life for wire drilling cables is placed first, because the cost of wire lines is one of the largest items of expense chargeable to deep wells. Second, is the problem of devising means of overcoming the disastrous and expensive effects of gas blowouts encountered in several parts of the Appalachian region.

Experience indicates that the life of wire drilling cables can be extended materially by drastically reducing the total weight of the tools and, at the same time, lengthening the drilling stroke. The weight of the tools is re-

duced by shortening the stem or bar below conventional lengths.

This procedure demands the use of swivel sockets instead of straight, or stiff, sockets for maintenance of proper reaction of the tools during drilling. Among other advantages, use of swivel sockets in drilling deep wells enables the drilling of straighter holes, reduces friction against the wall of the hole and consequent line abrasion and line cutting of casing, and has speeded up drilling time. It is very difficult to run swivel sockets at depths greater than 5000 feet with the wrist-pin in the second hole on the crank. By running the wrist-pin in the third hole, however, it is possible to drill without trouble or inconvenience to depths of 8100 feet.

The length of the stem has been reduced to 25 feet and has eliminated all wire-line trouble arising from functional causes. With the hook-up described, a more effective blow is delivered at the bottom of the hole, consequently more hole is made in a given period of time than is the case where a long stem and a stiff socket is used with the shorter stroke when the wrist pin is in the second hole on the crank.

Gas blowouts in the Appalachian region usually occur in the Devonian shale section above the Onondaga lime. There are certain criteria which are ordinarily encountered immediately above these gas pockets. Five or 10 feet above one of these gas pockets a very little gas will be noticed on top of the bailer. A little below this depth a hard shell will slow up drilling progress. This is the time to watch out.

The use of salt water drilling fluid at this point of the operation has been found potentially effective in overcoming difficulties arising from gas blowouts. However, experiences still have to uncover the proper procedure of using such a fluid.

The best practice uncovered to date seems to be to load the hole with approximately 200 feet of salt water. Thereafter, after each run of about 10 feet the bailer should be run to bottom to take out mud and cuttings and to add a bailer of salt water. In this manner, that portion of the fluid column carrying the heaviest particles of sludge is removed and fluid relatively free from sand pumpings remains. However, it has been found that after about one or two days, the entire fluid column will get quite muddy and too sticky to permit the bit to make satisfactory progress and that the walls of the hole will begin to cave. Consequently, it is thought advisable to bail out all the fluid, cement the cave, and then inject fresh brine.

It has been found that by using a column of salt water just about as good drilling time can be made through the zone of gas blowouts as can be made in the shales above that horizon.

Appraisal of Oil Properties

By Ralph E. Davis
Ralph E. Davis, Inc.,
Pittsburgh, Pennsylvania

Since no two oil fields or properties are alike, the appraiser must learn every fact having a bearing upon their values. This means that the broad geologic relationships, as also the more detailed geologic facts, must be studied and understood. Physical and chemical relationships, such as the tendency of some crude oils to paraffin or to form other solids, thus tending to diminish the effective permeability, must be studied. The effective thickness of the pay horizon, the effective porosity and permeability, the degree of oil saturation, the viscosity of the oil, the extent of energy present as gas dissolved in the oil and possibly present as a gas cap, also the effect of possible water drive, must be investigated, and if possible understood. The danger that may accrue from water beneath the oil in the pay sand, the question as to whether edge water may prove to be an asset or liability, likewise the danger of inadequate recovery due to the excessive release of gas from solution in the reservoir about the well, must be decided. When these and many other factors have become the knowledge of the appraiser, he is prepared to plan his approach to the further problems of appraisal. The owner, oil company executive, the banker, or the prospective purchasers cannot afford to make hasty judgments of value without giving due consideration to the inter-relation of the many elements of value that can be made available through competent appraisal.

Requirements and Practice of Lubrication

By Arch L. Foster
The Lubri-Zole Corporation,
Cleveland, Ohio

Advances in modern engines to high compression units have made it necessary to use treated oils if it is to remain clean. Two general properties of the lubricant must be improved before the naturally produced mineral oil can deliver the goods: (1) the load-carrying capacity must be increased beyond that of the natural hydrocarbons; (2) the resistance of the lubricant to oxidation, to change in chemical properties must be improved to a point where the lubricant retains practically its original qualities during its period of use.

Two general methods are available to effect this improvement. These qualities can be improved only by the inclusion of materials possessing those qualities in greater degree than do naturally occurring petroleum hydrocarbons. That is, by adding chemical compounds.

Plan special train for API mid-year meeting

A special train for oil men going to the American Petroleum Institute's mid-year meeting at Fort Worth, May 27 to 31, is being sponsored by the petroleum industry's 25-Year Club.

The train will leave New York at 8 p.m. May 25 on the New York Central Lines, and will be joined en route by cars from other eastern and midwestern points. The train will be air-conditioned throughout, and entertainment will be provided as in previous years. Schedules and reservations may be obtained from Mr. Wotowitch, 70 Pine Street, New York.

Michigan Gas Transmission to build 53-mile line

Construction work on a 53-mile 24-inch natural gas line for Michigan Gas Transmission Company between Montezuma and Crawfordville, Indiana, will be started May 15 by T. R. Jones, Dallas, contractor. Completion of the line is scheduled for September 15.

Washington

To decide on oil industry monopoly investigation

Hearings to determine the attitude to be adopted by the Senate Judiciary Committee on a resolution introduced in the Senate March 14 by Senator Gerald P. Nye, Representative of North Dakota, providing for an investigation of monopoly in the oil industry, will open April 16 before a subcommittee appointed to study the measure. Members of the subcommittee are Senators Carl A. Hatch of New Mexico, and Matthew M. Neely of West Virginia, Democrats, and John A. Danaher of Connecticut, Republican.

The resolution would authorize the Judiciary Committee to make an investigation and report to the Senate "(a) whether any person, partnership or corporation has violated, or is violating, the anti-trust laws by acting in a manner which created a monopoly or tends to create a monopoly for the control of the production, transportation, sale and distribution of natural gas and petroleum, and (b) whether the anti-trust laws have been fully, adequately and impartially enforced to enable consumers and potential consumers to obtain supplies of natural gas and petroleum on a competitive basis."

The committee would be authorized to sit during the recess of Congress and empowered to require the attendance of witnesses and the production of records by subpoena, if necessary. It would be given authority to expend up to $10,000 on the investigation.

Marketing-divorce bill given to Cole committee

Moving to consolidate the handling of oil legislation so as to avoid having several committees traverse the same ground, the House Judiciary Committee has turned the Harrington marketing-divorce bill over to the committee on interstate and foreign commerce for consideration by the Cole subcommittee.

Announcing the decision of his committee to relinquish the legislation, on which it held extensive hearings in May and June of last year, Chairman Hatton Sumners of the judiciary group explained that it was felt that the subject properly was one for handling by the Interstate Commerce Committee.

No special significance is seen in the transfer, and it is not expected that the Cole subcommittee will do much with the measure this session other than, possibly, to review the record already accumulated.

The Harrington bill would make it unlawful for any person, directly or indirectly, to engage in the marketing of refined products in interstate commerce while simultaneously engaged, directly or through an affiliate, in production, refining or transportation.

To recycle at Opelika

Shamrock Oil & Gas Corporation and Lone Star Gasoline Corporation have been granted a permit to conduct recycling operations in the Opelika field, Henderson County, Texas.

MEN IN THE INDUSTRY'S NEWS

L. C. SNIDER, elected president of the American Association of Petroleum Geologists at the twenty-fifth annual meeting in Chicago last week, was for four years editor of the organization's bulletin. Seven of the publications of the association were printed during his period as editor.

Since 1925 he has been in the New York headquarters of Cities Service Oil Company as consulting geologist.

He is a 1909 graduate of the University of Indiana, and was with the Oklahoma Geological Survey until 1915, the year he was given a doctor of philosophy degree by the University of Chicago. Later he was with Pierce Oil Corporation, Cosden Oil & Gas Company and Empire Gas & Fuel Company in Oklahoma.

Snider is a member of the Geological Society of America, the Society of Economic Geologists and the American Institute of Mining & Metallurgical Engineers.

LESLIE B. RIGGINS, JR., chief petroleum engineer for Pantepec Oil Company of Venezuela since September 1, 1939, has been made assistant chief of field operations in charge of drilling, production and materials. Riggins, who hails from California, has done considerable research on cements and cementing methods. He organized and taught in the petroleum engineering division at the Coalinga Extension of Fresno State College in California. His practical experience dates back to 1924, when he started out roughnecking. He holds a degree in petroleum engineering and geology from the University of Southern California.

H. T. KEMP, former assistant secretary of Anglo-Iranian Oil Company, has been appointed secretary, taking the place of John Clark, who has decided to retire in December. Kemp joined the company in 1927, when he was attached to the concessions branch at the head office in London.

E. R. SHAW, for the past two years personnel manager for Standard Oil Company of Louisiana at Shreveport, has returned to The Carter Oil Company and will establish a personnel office at Mattoon, Illinois, for the company's Eastern division.

FLORENT H. BAILLY, for 14 years with Pantepec Oil Company of Venezuela as engineer in charge of field operations, recently was promoted to chief of field operations. He holds a general engineering degree from California Institute of Technology.

J. M. KIRBY, Rocky Mountain district geologist for The California Company since 1937 with headquarters in Denver, has been transferred to the San Francisco office of Standard Oil Company of California.

PROFESSOR W. H. TWENHOFEL, University of Wisconsin, will discuss sedimentation before South Texas geologists meeting at Beeville April 15. The regular meeting of the South Texas Geological Society scheduled for April 19 has been postponed indefinitely in favor of the South Texas Chamber of Commerce oil men's jubilee, to be held in San Antonio on that date.

WAYNE MOORE, former scout at Mendenhall, Missouri, for Stanolind Oil & Gas Company, has been transferred to Midland, Texas. He replaces Jack Malloy, transferred to the company's Tulsa office.

H. G. MOULTON, president of the American Institute of Mining & Metallurgical Engineers, New York, was guest of the Gulf Coast chapter at a banquet, April 8, in Houston. On April 10, he addressed the Petroleum Engineers Club of the University of Oklahoma, Norman.

W. E. THOMPSON, land man for Tide Water Associated Oil Company, has been transferred from Midland to Wichita Falls. Leland Davison, formerly at Wichita Falls, takes Thompson's place at Midland.

C. F. WAGNER, consulting transmission engineer for Westinghouse Electric & Manufacturing Company, addressed the Oklahoma City Chapter of the A. I. E. E. on April 9.

DANIEL B. GREENE, formerly in the Midland geological office of Magnolia Petroleum Company, has been assigned to scouting duty, succeeding W. L. Douthit, transferred to Oklahoma City.

MAJOR P. DE H. HALL, executive of Anglo-Iranian Oil Company and officer in England's Royal Engineers, recently had the territorial efficiency decoration conferred upon him by the king.

F. J. NICHOLSON of Shell Oil Company's land department has been transferred from Lake Charles, Louisiana, to Midland, Texas, where he replaces Walter Cremin, resigned.

ED C. ABELL has been transferred from Shell Oil Company's land department at Baton Rouge, Louisiana, to the Shreveport district.

LEE MINTER, petroleum engineer with Belmont Quadrangle Drilling Company, Bradford, Pennsylvania, has been stationed at Jackson, Mississippi.

JOHN T. GIBSON, A. C. Saunders and Bernita C. Fallis, all of Tulsa, have organized Arrowhead Producing Corporation with an Oklahoma charter.

RALEIGH P. COATES, former district superintendent for Olson Drilling Company, is with M. B. K. Drilling Company at Midland, Texas.

JOE CLARK and Phil Daviss, geologist and scout, respectively, for Tide Water Associated Oil Company at Houston, have been transferred to Wichita Falls, Texas.

CLAREL B. MAPES, general secretary of Mid-Continent Oil & Gas Association, Tulsa, was attending the wage and hours hearings at Washington last week.

LORD JOHN CADMAN, board chairman of Anglo-Iranian Oil Company, has been appointed by the British Secretary of Mines as honorary advisor on oil to the ministry. Lord Cadman also has been appointed chairman of the advisory council on scientific research and technical development, a body created by the Minister of Supply to advise him on scientific and technical problems. Two scientific advisors to Anglo-Iranian Oil Company, I. M. Heilbronx, professor of organic chemistry at London University, and R. Robinson, professor of chemistry at Oxford, also are members of the council.

B. B. WEATHERBY, president of Geophysical Research Corporation and vice-president of Amerada Petroleum Corporation, Tulsa, succeeds the late Dr. C. K. Francis as co-chairman of the scientific committee of International Petroleum Exposition. Weatherby will serve with Dr. Gustav Egloff, director of research for Universal Oil Products Corporation, Chicago.

ROBERT WILSON, all-American football player when attending Southern Methodist University, has been transferred from the Sun Oil Company's Dallas district office to Gainesville to scout deep lime areas in North Texas.

STANLEY S. STINSON, West Texas scout for Humble Oil & Refining Company, Midland, departed by plane for St. Louis early last week upon receiving word of the critical illness of his brother, T. E. Stinson.

J. H. HUFF, former superintendent for The Ohio Oil Company in Southwest Texas, is now operating independently with headquarters in Alice, Texas.

AGHAI A. A. K. RAHNEMA, assistant manager at Ahwaz for Anglo-Iranian Oil Company since 1937, recently retired.

R. C. POWLESS has been named scout for Tide Water Associated Oil Company in the Texas Gulf Coast territory.

LEE A. ADAMS, scout for Sinclair Prairie Oil Company, has been transferred from Oklahoma City to Ardmore.

W. C. NYE, production superintendent for Cardinal Oil Company, has been transferred from Iraan to San Angelo, Texas.

DIED:

FRANK W. KING, 57, Tulsa operator, died April 7 at Mineral Wells, Texas, where he was receiving treatment for a heart ailment. He had engaged in production and drilling contract operations in Oklahoma and Texas for many years.

WILLIAM MARSHALL MITCHELL, of Mitchell Drilling Company, Great Bend, Kansas, died in an automobile accident April 6.

E. T. NOBLE, Tulsa drilling contractor, died of a heart ailment April 10.

Markets generally steady but gasoline still weak

The markets have continued fundamentally about the same as in the past few weeks, although the routine of trading has been broken by the current switching over to new standards in grading and quoting motor fuel.

Moreover, there has been some sacrifice of price in setting up the new quotations, which involve a new grouping of octane numbers as well as a new octane test method.

Gasoline that measured up to a given standard on the old basis falls short of the octane requirements on the new basis and generally has been offered, consequently, at concessions in prices.

Last week material was being offered under both the old and new groupings, and maximum asked prices on the old basis were generally ⅛ to ¼ cent lower than a week previously.

Gasoline Market

There are hopes in the industry that the gasoline market will improve as the season of heavier consumption proceeds, but no definite improvement has yet occurred.

Continuing as an obstacle to higher prices, probably, is the still-mounting inventory of gasoline, stocks having shown a further increase of 320,000 barrels in the week ended April 6, whereas withdrawals from storage usually begin early in April if not in the latter part of March.

Lubricants and Kerosene

Prices of most of the refined products other than gasoline were generally the same last week as in the week before.

Lubricants represented an exception, quotations having eased further, in extension of the gradual decline of the past several weeks. Both export and domestic demand for lube oils has diminished since the beginning of this year, and the market has reflected the curtailment of sales. In Western Pennsylvania bright stocks and neutral oils have been marked down another 1 cent a gallon.

Kerosene continues in good demand, with supplies relatively scarce and tightly held. Prices last week were generally unchanged.

Fuel Oils Steady

Although the season of heavy consumption of light fuel oil is near the close, the market for that product remains steady and prices last week were generally unchanged. At this juncture it is indicated that there will be a scarcity of heating oil next fall and winter, although refiners are being urged to begin taking precautions now for the requirements then, by taking relatively large yields of that product and comparatively small yields of gasoline, supplies of which are seriously excessive.

Heavy fuel oils continue to be quoted generally at the same prices as in the immediate past, despite slowing down of demand and current building up of storage. The stocks were augmented by the comparatively large amount of approximately 2,000,000 barrels in the week ended April 6.

Crude Oil Market

The markets for crude oil have held up well in the face of the overproduction of the past month and a half and

PRODUCT PRICES

	Range Late Last Week (Cents a gal.)		Changes from Week Before	
REFINED GASOLINE				
Oklahoma Refineries:				
62 Octane and under	3¾	4	...	—⅛
63-66 Octane	4	4⅜	...	...
67-69 Octane	4¼	4½	...	—¼
70-72 Octane	4½	4⅝	...	—¼
Mid-Western Tank Car:				
62 Octane and under	3¾	4⅛	...	...
63-66 Octane	4	4⅛	...	...
67-69 Octane	4¼	4⅜	...	—¼
70-72 Octane	4½	4¾	...	—¼
New York Harbor:				
70 Octane and under	6¼	6½	...	—¼
72-74 Octane	6¼	7¼	...	...
NATURAL GASOLINE				
Grade 26-70:				
F.C.B. Group 3	1½	1½	...	...
F.O.B. Breckenridge, Texas	1¼	1¼	...	...
KEROSENE				
Oklahoma Refineries:				
41-43 water white	3⅞	4¼	...	...
42-44 water white	4	4⅝	...	...
Mid-Western Tank Car:				
41-43 water white	3⅞	4¼	...	...
42-44 water white	4	4⅝	...	...
New York Harbor:	6	6¼	...	...
RANGE OIL				
At Oklahoma Refineries	3⅝	3⅞	...	...
In Mid-Western Market, Group 3 basis	3¾	4	...	...
LIGHT FUEL OILS				
Oklahoma Refineries:				
No. 1 straw	3⅝	3¾	...	...
No. 3	3¼	3⅜	...	...
Mid-Western Tank Car:				
No. 1 straw	3½	3⅝	...	...
No. 3	3¼	3⅜	...	...
New York Harbor:				
No. 1	6	6¼	...	...
No. 3	5½	5⅝	...	...
HEAVY FUEL OILS (Per Barrel)				
Oklahoma Refineries:				
No. 6	50	50	...	...
Mid-Western Tank Car:				
No. 5	75	75	...	...
No. 6	45	55	...	...
New York Harbor:				
No. 5	$1.70	$1.85	...	...
No. 6	1.50	1.50	...	...
BUNKER C FUEL OIL (Per barrel, ships bunkers)				
Gulf Coast	$ .90	$1.00	...	...
New York Harbor	1.50	1.50	...	...
DIESEL OIL (Per barrel, ships bunkers)				
Gulf Coast	$1.70	$1.70	...	...
New York Harbor	2.20	2.35	...	...
Los Angeles Basin, 27 gravity	1.00	1.40	...	...
LUBRICATING OIL				
Oklahoma Refineries:				
Bright stock, 150-160 viscosity at 210°, 10-25 pour test	20	24½	...	...
Neutral oil, pale, No. 3 color, 150 viscosity at 100°, 0-10 pour test	10½	13¾	...	...
Western Pennsylvania:				
Bright stock, 145-155 viscosity, at 210°, 25 pour test	23	23	...	—1
Neutral oil, No. 3 color, 150 viscosity, at 70°, 25 pour test	23	24	—1	...

Trends of United States Production and Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	FUEL OIL STOCKS	
					Gas Oil & Dist. Fuels	Residual Fuel Oil
1937:						
August 28	[5]3,731,450	3,425,000	309,506,000	66,997,000	112,111,000	
September 25	3,666,300	[5]3,455,000	307,974,000	65,620,000	116,472,000	
1938:						
March 19	3,433,550	3,080,000	306,380,000	[5]93,192,000	122,067,000	
November 12	3,243,250	3,180,000	273,394,000	[6]67,551,000	34,175,000	120,491,000
December 10	3,245,100	3,150,000	[6]269,509,000	68,687,000	32,068,000	118,711,000
December 31	3,201,450	3,115,000	273,024,000	71,695,000	29,082,000	115,741,000
1939:						
January 28	3,248,250	3,235,000	271,763,000	77,279,000	26,583,000	112,766,000
February 25	3,328,850	3,185,000	271,758,000	84,597,000	23,419,000	110,252,000
March 25	3,382,350	3,225,000	273,915,000	87,561,000	21,487,000	107,551,000
April 22	3,526,700	3,280,000	277,156,000	[2]87,769,000	21,085,000	105,035,000
April 29	3,568,200	3,405,000	278,440,000	86,794,000	[7]25,844,000	[7]108,409,000
May 6	3,580,900	3,275,000	[2]278,607,000	86,216,000	26,167,000	108,597,000
May 27	3,585,250	3,405,000	278,289,000	84,152,000	26,992,000	109,386,000
June 24	3,452,800	3,430,000	272,297,000	81,733,000	30,239,000	111,726,000
July 29	3,539,100	3,460,000	268,513,000	77,887,000	34,900,000	114,053,000
August 5	[1]3,909,400	3,445,000	268,982,000	76,431,000	35,601,000	114,512,000
August 26	[1]1,690,800	3,475,000	246,982,000	73,475,000	37,722,000	116,237,000
September 30	3,658,200	3,560,000	233,023,000	71,168,000	38,081,000	115,466,000
October 7	3,435,850	3,505,000	231,564,000	[6]71,152,000	38,549,000	114,397,000
October 21	3,771,550	[1]3,650,000	[3]229,127,000	72,122,000	39,358,000	115,060,000
October 28	3,498,500	3,520,000	230,453,000	72,660,000	39,562,000	114,786,000
November 25	3,818,100	3,510,000	231,811,000	75,595,000	38,527,000	112,106,000
December 30	3,545,000	3,445,000	237,742,000	80,985,000	34,184,000	106,680,000
1940:						
January 27	3,611,600	3,470,000	237,339,000	87,914,000	27,407,000	103,015,000
February 3	3,498,800	3,395,000	239,380,000	89,337,000	26,861,000	102,536,000
February 10	3,688,100	3,460,000	239,510,000	91,649,000	26,007,000	102,344,000
February 17	3,717,950	3,570,000	238,928,000	93,985,000	25,876,000	103,424,000
February 24	3,732,100	3,490,000	240,836,000	96,719,000	25,390,000	103,419,000
March 2	3,798,250	3,445,000	244,126,000	98,364,000	25,015,000	103,521,000
March 9	3,828,550	3,450,000	245,762,000	99,397,000	24,560,000	103,825,000
March 16	3,890,050	3,500,000	246,762,000	100,616,000	24,075,000	103,588,000
March 23	3,871,450	3,560,000	247,401,000	101,298,000	23,275,000	102,798,000
March 30	3,841,250	3,585,000	250,561,000	101,370,000	23,778,000	105,081,000
April 6, 1940	3,745,000	3,455,000	.....	[1]101,690,000	23,551,000	105,099,000
April 8, 1939	3,443,900	[8]3,293,000	[4]276,119,000	87,203,000	26,014,000	108,980,000
Change in past year	+8.7%	+4.9%	—9.3%	+16.6%	—9.4%	—3.6%

[1] All time peak. [2] Peak for 1939. [3] Lowest since April, 1922. [4] Stocks, April 1, 1939. [5] Peak prior to 1939. [6] Lowest for year. [7] Prior to April 29, 1939, data did not include stocks at terminals, in transit, etc., except in California. [8] March-April, 1939, daily average. [9] Lowest since October, 1922, due to the shutdown of six Mid-Continent States.

the indicated further excess of output in the remainder of April. Some encouragement has been given, however, by the prospects of stricter crude control beginning May 1. Texas has been conspicuous among states adding crude to storage under liberal allowables, but two of the three members of the Texas Railroad Commission have asserted that they would favor holding allowables within the Bureau of Mines estimates in May, June, and July.

Operations curtailed but stocks still increase

The industry has curtailed output at both wells and refineries, but stocks of crude oil and of the principal refined products have been increasing, indicating that operations still are above economic levels.

United States crude oil production was reduced nearly 100,000 barrels daily in the week ended April 6, having been cut to 3,745,000 barrels daily. However, the output was 195,000 barrels a day in excess of indicated average daily requirements for April. It was 8.7 percent greater than that of 3,443,900 barrels daily in the corresponding week last year.

Crude runs to stills were cut back by the large amount of 130,000 barrels daily, having averaged 3,455,000 barrels a day in the week of April 6. The runs then were only about 5 percent larger than March and April last year.

Production of gasoline came down to 11,362,000 barrels for the week ended April 6 from 11,570,000 barrels in the preceding 7 days, a decrease of 208,000 barrels for the week, or about 30,000 barrels daily.

Despite the smaller production, however, gasoline continued to go into storage, the stocks having risen from 101,370,000 to 101,690,000 barrels, a new all-time peak. The inventory then was 16.6 percent larger than a year ago.

Although the industry in the previous week added heating oil to storage, it made a withdrawal of practically the same amount, 227,000 barrels, in the week ended April 6. The 23,551,000 barrels then left on hand constituted 9.4 percent less than the inventory held at the corresponding time last year. In contrast, demand has been running, and will continue to run, materially higher than a year ago, indicating that substantial additions to storage should be made through the summer, in anticipation of heavy demand when the new consuming season begins.

Stocks of residual fuel oil were increased negligibly in the week ended April 6, having risen from 105,081,000 to 105,099,000 barrels. The latter quantity was 3.6 percent less than that on hand a year ago.

Large production of crude oil lately has resulted in steady additions to storage, despite comparatively large refinery runs. The stocks of the country were increased over 3,000,000 barrels, an exceptionally large amount, in the week ended March 30, latest period for which Bureau of Mines figures are available. Having mounted to 250,561,000 barrels, the crude stocks were over 20,000,000 barrels greater than when they hit their low point last October, following the general shutdowns of Mid-Continent fields. The present inventory is, however, 9.3 percent smaller than that of a year ago, when the total was 276,119,000 barrels.

Production of 3,910,310 barrels sets new all-time high

United States crude oil production during the week ended April 13 touched a new high at 3,910,310 barrels daily. The previous record of 3,909,400 barrels daily established in the week ended August 5, 1939, was passed as the Texas total rose 133,200 barrels with a return to a straight production week, and a substantial gain was recorded in California.

At the new record level, national output was 409,700 barrels in excess of the United States Bureau of Mines estimate of demand for domestic crude, with every prospect that another new record might be set during April.

Export of less crude and more products expected

Some men in touch with the oil export situation are of the opinion that high transportation costs across the Atlantic should result in relatively more refined products than crude oil being moved, despite the fact buyers need crude by-products as well as gasoline and fuel oil.

For the shipping charge has become so important that European buyers find it increasingly advisable to pay freight only on the particular products most urgently needed, instead of importing crude, some component parts of which are not greatly needed.

It costs about as much per barrel for moving crude across the ocean as for shipping gasoline or other products, and the crude is relatively less valuable and less desirable when received.

East Texas crude, for example, which

United States Crude Oil Production

Estimates Compiled by THE OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (April)	State Allowable in April	BARRELS DAILY FOR WEEK ENDED April 13	April 6
TEXAS—				
Texas Panhandle			83,500	70,650
North Texas			107,250	95,500
West Central Texas			33,450	30,200
West Texas			278,500	248,500
East Central Texas			104,250	82,000
East Texas Field			396,900	398,100
South Texas			274,000	245,200
Texas Gulf Coast			255,400	229,900
Total Texas	1,332,000	1,514,433*	1,533,250	1,400,050
CALIFORNIA—				
Long Beach			51,250	45,000
Midway-Sunset			59,300	56,500
Kettleman Hills			46,200	51,100
Wilmington			83,100	83,400
Others			391,550	361,400
Total California	590,000	592,000†	631,400	597,400
ILLINOIS—				
Salem			255,100	258,500
Louden			74,400	77,200
Other New Pools			83,600	83,700
Old Pools			9,150	9,000
Total Illinois	380,000		422,250	428,400
OKLAHOMA—				
Oklahoma City			90,750	102,500
Seminole Area			94,600	106,000
Others			226,950	212,275
Total Oklahoma	413,000	413,000	412,300	420,775

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (April)	State Allowable in April	BARRELS DAILY FOR WEEK ENDED April 13	April 6
LOUISIANA—				
North Louisiana		60,883	68,000	67,250
South Louisiana		223,250	217,000	221,300
Total Louisiana	257,000	284,133	285,000	288,550
KANSAS	151,000	151,000	176,400	175,350
NEW MEXICO	100,000	114,000	114,500	114,700
EASTERN STATES—				
Pennsylvania Grade			74,900	73,400
Others, Eastern			22,900	23,700
Total Eastern States	101,500		97,800	97,100
MOUNTAIN STATES—				
Wyoming	60,600		65,700	72,250
Montana	15,200		17,700	16,800
Colorado	3,500		3,950	3,950
Total Mountain States	89,300		87,350	93,000
ARKANSAS	64,500	70,000	70,200	70,550
MICHIGAN	63,000	62,000	63,500	63,050
MISSISSIPPI	3,900		7,650	8,100
INDIANA	7,800		8,700	8,800
‡Total 8 Prorated States	2,970,500	3,219,566	3,286,550	3,130,425
Total United States	3,500,600		3,910,310	3,765,825

* Daily net average, considering general shutdown of April 1, plus 11 ensuing shutdown days in East Texas field.
† Recommendation of Central Committee of California Oil Producers.
‡ Texas, California, Oklahoma, Louisiana, Kansas, New Mexico, Arkansas, Michigan.

is delivered on board ships at the Gulf Coast for $1.30 a barrel, by independent interests, now brings about $3.05 a barrel delivered in Europe, the tanker rate having been boosted to about $13 a ton.

Tanker owners are having much labor trouble with crews, because of the hazards of the sea, and must pay wage bonuses plus heavy insurance. Consequently, the owners demand premiums per barrel for risking the loss of their ships in the war zones.

The belief prevails that the Allies will do considerable buying of petroleum products in the United States, but that shipments will continue to be hindered by the scarcity of tankers.

In that connection, the attack on Norway by Germany has complicated matters. Norwegian ships account for 19 percent of the world's tanker tonnage, and those boats will be tied up and out of service pending further clarification of the war situation.

Tankers

War in Norway may cause further high tanker rates

Possibility of indefinite continuation of domestic tanker rates at high levels is foreseen as a consequence of the involvement of Norway in the European war.

For Norway has about 18 percent of the tankers of the world, and if Norwegian boats are withdrawn from movement between the United States and South American and neutral European ports, the demand for American flag vessels will be materially increased.

Even prior to Germany's invasion of Norway, when Norwegian tankers were free to take advantage of available business the American tankers were extremely busy moving oil to the Atlantic seaboard from the Gulf Coast and from South America.

It is believed that the Norwegian government may requisition all tonnage flying the flag or Norway and combine the boats with already requisitioned British and French tankers.

It is pointed out, further, that Norway's status as a belligerent will make Norwegian boats subject to higher war risk insurance, regardless of whether the ships are requisitioned to augment the allied fleet; and that the high costs of operating Norwegian tankers will stimulate the demand for American boats.

At Gulf Coast ports late last week, it was reported that oil tankers flying flags of Scandinavian countries had been ordered to stand by and not load cargoes consigned to countries of northern Europe.

Reports from Washington last week indicated the possibility that many of the Norwegian and Danish merchant ships, including oil tankers, might be transferred to American registry, to avoid being taken over by Germany or Great Britain. It was said that discussions along that line already had been started between Scandinavian shipping interests and American officials. A Danish concern with branch offices in New York was described as ready to place its fleet of 60 ships under American registry.

Transfer of the Scandinavian boats to American registry would bar them from the war zones delineated by the president of the United States, under the neutrality act.

Some American business interests welcomed the possibility of the transfer of the boats to American registry, as they felt that such action would reduce the scarcity of shipping accommodations, American boats having been hardly able to meet the increased demands made upon them since the European war began.

Another possibility pointed out is that some Scandinavian ships may be transferred to Panama registry.

American government officials now are in a position directly opposite that which they occupied at outset of the war. At that time, American-owned oil tankers were being transferred to Panama registry, with approval of the Maritime Commission, although the state department subsequently discouraged such practice on the ground that it violated the spirit of the neutrality act.

Norway and Denmark are among the principal shipping countries of the world. Norway's tonnage of 4,800,000 is fourth, and Denmark's amounts to more than 1,000,000.

In oil tanker tonnage, Norway ranks third. "Petroleum Facts and Figures" for 1939 included the following figures on tanker tonnage:

Country	Number of Tankers	Gross Tons
All Countries	1655	10,715,680
British Empire	470	3,013,687
United States	418	2,759,642
Norway	262	1,972,469
Netherlands	112	561,946
Italy	78	380,488
Panama	49	450,261
France	40	241,896
Japan	39	345,849
Germany	31	202,221
Russia	27	123,209
Sweden	17	144,899
Denmark	14	106,786

It was recognized as possible that Germany might gain control of a considerable number of Scandinavian oil tankers through the extension of the war into that region, although it was questioned whether the tankers could then be used to great advantage in alleviating Germany's oil needs. It was evident, nevertheless, that a consolidation of Germany's position on the Norwegian coast would make it easier for Germany to bring in supplies, including oil, from South America or North America; inasmuch as boats able to reach the northern or other sections of the Norwegian coast would be better able to proceed on to German ports.

House subcommittee ordered to study tanker situation

A thorough study of the tanker situation was initiated last week by a subcommitee of the House Committee on Merchant Marine and Fisheries. It will form the basis of a decision on the action to be taken on the Harrington resolution for an investigation.

Members of the subcommittee are Representatives Edward J. Hart, of New Jersey; J. Hardin Peterson, of Florida; Jack Nichols, of Oklahoma, and Vincent F. Harrington, of Iowa, Democrats, and Joseph J. O'Brien of New York, and Harry Sandager, of Rhode Island, Republicans.

The subcommittee was instructed to inquire and report on (1) the ownership, registry, operation, practices, charges and other matters affecting transportation of oil, petroleum, or petroleum products to, from, or between ports or other points of the United States, its territories or possessions, by oil tankers, or their affiliates, either of domestic or foreign registry; (2) the transfer of oil tankers to foreign registry, number and times of transfer made, to whom, and the effect on transportation rates, prices of oil, petroleum or other products, for domestic consumption or other use within the United States, its territories or possessions; and on prices of bunker oil; (3) the chartering, leasing, or other hiring of oil tankers by the owners and the extent of such activity as between supposed competitors; (4) the relations, corporate, contractual, and otherwise, between producers, refiners, and marketers of petroleum products, on the one hand, and the effect of such relations on (a) the independent non-integrated producer, refiner, or marketer of petroleum products, and (b) the consumer of petroleum products; and (5) any and all other matters with reference to the subjects of inquiry above, or growing out of the same, that the subcommittee shall deem pertinent or relevant.

The subcommittee is to make its report to the full committee "as soon as practicable."

Mix East Texas natural with Talco heavy crude

Surplus natural gasoline production held by plants in the East Texas field will be utilized in facilitating movement of low-gravity crude routed via the field. Tenders have been approved for the delivery of 65,000 barrels of natural gasoline by Hanlon Pipe Line Company, which handles production from a group of field plants to Humble Pipe Line Company for the account of Standard Oil Company of Louisiana. Humble Pipe Line Company will mix the high-gravity material at its Longview station with 17,000 barrels of daily runs from the Talco field then relay the products to the Louisiana concern which has purchased Talco crude since October 1936.

Delivery of the 10,000-barrel daily volume of East Texas crude sold by Sinclair Prairie Oil Marketing Company to Magnolia Petroleum Company during April and May is being made at the latter's tank farm near Camps Switch, Gregg County. Sinclair Refining Company gathers the oil in the north portion of the field and delivery to Beaumont is made by Magnolia Pipe Line Company.

February production gains to set all-time record

Setting a new all-time record, domestic petroleum production in February reached an average of 3,747,200 barrels per day, a jump of 97,000 barrels above the January average and 24,000 barrels above the previous record of 3,723,000 barrels made in August, 1937, it was reported April 8 by the United States Bureau of Mines.

Total production for the month was 108,668,000 barrels, 4,472,000 barrels under the January output because of the shorter month, but 15,193,000 barrels above the February, 1939, figure, the bureau announced.

"Most of the states increased their

output rate in February, the most notable exception being California's average which, however, remained above 600,000 barrels," it was explained. "Illinois passed the 400,000-barrel mark in setting a new record of 404,400 barrels daily. The Louisiana Gulf was another record breaker, and the average for Louisiana rose from 271,500 barrels in January to 281,400 barrels in February. Despite the competition from Illinois, both Kansas and Oklahoma increased their output substantially."

Daily average crude runs to stills also increased, from 3,436,000 barrels in January to 3,509,000 barrels in February, but this was outweighed, it was pointed out, by the gain in output and a decline in exports, with the result that the rate at which crude oil was being added to storage increased. As a result, nearly 5,000,000 barrels were added to refinable crude stocks during the month, compared with an increase of slightly less than 1,000,000 barrels in January.

The bureau found the yield of gasoline continuing to be influenced by the record-breaking heating-oil demand, falling in February to 42.4 percent, the lowest since January, 1931, and a decline of 0.5 percent from January of this year. The yield of light fuel oil rose 0.5 percent to 16 percent, the highest ever reached. However, the bureau saw indications that the heavy fuel oil market is easing in the material decline in the residual fuel oil yield during the month.

Demand figures for motor fuel for February were similar to those of January in that the domestic demand exceeded expectations but the total demand was lower than expected because of the low exports, the bureau commented. Exports were 1,903,000 barrels, or just about 1,000,000 barrels below last year. In spite of the cut in yield, gasoline stocks continued to increase rapidly, finished stocks rising nearly 8,000,000 barrels to 92,721,000 barrels on February 29, with unfinished stocks rising nearly 500,000 barrels to 6,574,000 barrels.

"The daily demand for light fuel oil was not quite as sensational as in January, probably because the weather moderated, but was 17 percent above a year ago," the bureau observed. "The daily demand for residual fuel was only one percent higher than a year ago."

Aviation gasoline production for the month was 835,000 barrels, compared with 766,000 barrels in January, but exports fell to 125,000 barrels from 155,000 barrels. Domestic demand also fell off, from 554,000 to 356,000 barrels, with the result that stocks increased from 2,828,000 barrels January 31, to 3,182,000 barrels February 29.

Bureau of Labor Statistics figures placed the price index for petroleum products in February at 50.9, compared with 51.7 in January and 50.7 in February of last year. The crude-oil capacity represented by the report was 4,316,000 barrels, giving an operating ratio of 81 percent, the same as in January, but comparing favorably with 76 percent in February, 1939.

Details of new supply and demand for the month are shown in the accompanying table.

Bureau of Mines Report of Supply and Demand of All Oils

(Thousands of barrels)

	February 1940	January 1940	February 1939	January-February 1940	January-February 1939
New Supply:					
Domestic production:					
Crude petroleum	108,668	113,140	93,475	221,808	195,965
Daily average	3,747	3,650	3,338	3,697	3,321
Natural gasoline	4,179	4,271	3,747	8,450	8,011
Benzol[1]	231	272	170	503	355
Total production	113,078	117,683	97,392	230,761	204,331
Daily average	3,899	3,796	3,478	3,846	3,463
Imports[2]:					
Crude petroleum in bond	.....	286	332	286	827
Crude petroleum for domestic use	2,343	1,664	1,266	4,007	2,639
Refined products in bond	[3]1,553	1,441	1,167	2,994	2,215
Refined products for domestic use	[4]2,731	1,321	654	4,052	1,263
Total new supply, all oils	119,705	122,395	100,811	242,100	211,275
Daily average	4,128	3,948	3,600	4,035	3,581
Decrease in stocks, all oils	[5]12,600	4,324	1,128	[5]8,276	2,118
Demand:					
Total demand	107,105	126,719	101,939	233,824	213,393
Daily average	3,693	4,088	3,641	3,897	3,617
Exports[2]:					
Crude petroleum	3,327	4,202	4,810	7,529	9,287
Refined products	[6]5,765	[7]6,726	7,335	12,491	15,829
Domestic Demand:					
Motor fuel	37,557	40,370	34,595	77,927	72,362
Kerosene	6,263	7,642	5,901	13,905	11,881
Gas oil and distillate fuels	17,930	22,787	14,767	40,717	31,730
Residual fuel oils	26,816	32,148	25,589	58,964	54,032
Lubricants	1,522	2,054	1,653	3,576	3,262
Wax	61	125	97	186	171
Coke	629	689	605	1,318	1,135
Asphalt	788	821	833	1,609	1,894
Road oil	68	132	180	200	353
Still gas	5,393	5,522	4,629	10,914	9,710
Miscellaneous	35	240	153	275	326
Losses	952	3,261	792	4,213	1,421
Total domestic demand	98,013	115,791	89,794	213,804	188,277
Daily average	3,380	3,735	3,207	3,563	3,191
Stocks:					
Crude petroleum:					
Refinable in United States	244,417	239,794	273,416	244,417	273,416
Heavy in California	13,408	13,385	16,360	13,408	16,360
Natural gasoline	4,757	4,476	4,708	4,757	4,708
Refined products	270,464	262,791	270,444	270,464	270,444
Total, all oils	533,046	520,446	564,928	533,046	564,928
Days' supply	144	127	155	137	156

[1] From Coal Economics Division. [2] Imports of Crude as reported to Bureau of Mines; all other imports and exports from Bureau of Foreign and Domestic Commerce. [3] Exclusive of 71,000 barrels imported into non-contiguous territories from outside U. S. [4] Exclusive of 20,000 barrels into territories. [5] Increase. [6] Exclusive of 12,000 barrels exported from non-contiguous territories, but inclusive of 180,000 barrels shipped from U. S. to territories. [7] Revised.

Increased profits ahead

[*Continued from page 14*]

19 that had varying increases in profits, 3 that went from a losing to a profitable basis, and 2 that had smaller losses than in 1938.

Noteworthy gains in earnings were shown by companies in the East and Middle West. Because of relatively good prices of refined products on the Atlantic seaboard, especially good results were shown by Sun Oil Company and probably by such large concerns as Standard Oil Company of New Jersey and Socony-Vacuum Oil Company, which have not yet reported.

The exceptionally good results in the Middle West were made possible by the availability of Illinois crude at relatively low prices. Using Illinois crude, the refiner in the Chicago area has an advantage of around 25 cents a barrel over the refiner bringing in oil from the Mid-Continent. That advantage of being able to use Illinois crude was reflected in the improved earnings of Mid-Continent Petroleum Corporation, Pure Oil Company, Standard Oil Company of Indiana, Standard Oil Company of Ohio, and The Texas Corporation. Exceptional gains in earnings were recorded also by companies benefiting from the improved markets for lubricants and Pennsylvania grade crude. Quaker State Oil Refining Corporation, for example, earned three times as much in 1939 as in 1938, and South Penn Oil Company twice as much.

Among the 44 companies included in the accompanying table, 20 earned less in 1939 than in 1938. Especially prominent in that group were the solely producing companies, only a few of that classification having shown improvement. The producing companies were doubly handicapped, as crude production was smaller in 1939 than in 1938, while prices were lower, postings having remained throughout 1939 at the lower levels to which they were reduced in October of 1938.

Among the companies that earned less in 1939 than in 1938, accordingly, were Barnsdall Oil Company, Bishop Oil Company, Fohs Oil Company, Houston Oil Company, Margay Oil Corporation, Navarro Oil Company, North Central Texas Oil Company, The Ohio Oil Company, Panhandle Producing & Refining Company, Plymouth Oil Company, Seaboard Oil Company, Standard Oil Company of Kansas, Superior Oil Corporation and Texas Pacific Coal & Oil Company.

Some of the integrated companies also failed to do as well in 1939 as in 1938, particularly on the Pacific Coast, where product prices were less favorable. Declines in profits were reported by Union Oil Company of California, Tide Water Associated Oil Company, Skelly Oil Company, Pacific Western Oil Corporation, and Atlantic Refining Company.

WORLD-WIDE DEVELOPMENTS

By WM. V. GROSS, Associate Editor

Hull rebukes Mexico for delay in indemnification

Vigorously rebuking Mexico's defiance of the rights of nationals of the United States and her repeated unrecompensed expropriations of American properties, Secretary of State Cordell Hull on April 3 called upon the Mexican government immediately to submit the oil controversy to "impartial arbitration," and that the Washington Government is not to be moved from its position that properties taken by Mexico must be paid for was clearly evidenced in publication April 9 of the note handed Ambassador Francisco Castillo Najera for transmission to his government.

Throughout the note, although in diplomatic language, it was stressed that Mexico has gone beyond the bounds of legality in its expropriations and that "the taking of property without adequate, effective and prompt compensation is not expropriation but is confiscation, and * * * is no less confiscation because there may be an expressed intent to pay at some time in the future."

Not a New Thing

Secretary Hull referred to the fact that expropriations have been going on for 25 years and have raised many questions requiring equitable solution.

"Animated by the desire to find such an adjustment of all of these pending matters, this government proposed some two years ago an immediate and comprehensive study by representatives of the government of the United States and of the government of Mexico, for the purpose of preparing the way for an expeditious settlement of these controversial questions, the just solution of which would undoubtedly do much to cement the friendly relations between our neighboring peoples," he recalled.

"At that very moment the government of Mexico by an executive decree expropriated large holdings of oil properties, amounting in value to many millions of dollars and belonging to American nationals, for which no payment has been made and for which there is no present prospect of payment. At various times the government of Mexico has indicated its ability and readiness to pay. But the fact remains that no payments have been made."

Mexican Statement Incorrect

The secretary made it plain that Mexico did not speak for the United States in asserting that there is "no divergence of opinion" between the two countries on the subject of reimbursement.

"On March 16, 1940," he told Ambassador Najera in his note, "you were good enough to hand to me an informal memorandum pursuant to our earlier discussions of the difficulties arising out of the expropriation by your government of the oil properties belonging to American nationals. Without undertaking to pass in any way upon the memorandum as a whole, it is important to have a clarification of two or three of the points raised therein.

"It is stated (a) that 'the Mexican government judges that the right of expropriation is beyond discussion,' and (b) that 'there exists no divergence of opinion between the government of the United States and that of Mexico regarding the right of the Mexican state to expropriate any private property by payment of a just compensation, as Mexico is agreeable to paying such indemnity to the expropriated companies.'

"I am compelled to take exception to the statements that the 'right of expropriation is beyond discussion' and that 'there exists no divergence of opinion between the government of the United States and that of Mexico' in this respect.

"As above stated, in the opinion of the government of the United States, the legality of an expropriation is contingent upon adequate, effective and prompt compensation.

Governments Differ

"The difference between our two governments with respect to this principle lies in the fact that the government of Mexico has assumed and continues to assume to exercise a right without compliance with the condition necessary to give such exercise a recognizable status of legality."

The secretary pointed out that the March 16 memorandum also stated that since the two governments have not expressed "their respective points of view as to what should constitute a prompt, equitable and adequate indemnity to compensate the American oil companies" it would be premature to propose arbitration and that the Mexican government feels that "in order to determine the amount of the indemnity, the decision of the Mexican courts should be awaited."

"It is difficult to imagine in what way this government could have made plainer its point of view as to the compensation owing the American petroleum companies," the secretary commented. "Our records show that the obligation of the Mexican government to make compensation has been kept before the Mexican government constantly since the taking of the property. No stone has been left unturned by this government to bring about a satisfactory arrangement for compensation. Moreover, the statement of your government is not in the nature of things an adequate answer to the suggestion that arbitration would be an appropriate method of settling the differences between our two countries; nor is the statement that the decision of the Mexican courts should be awaited by any means reassuring."

Suggestion Discarded

Further, he said in reference to a suggestion that experts be designated by the two countries "to present and discuss their points of view regarding the calculation of the value of the expropriated properties," it cannot be perceived that there would be any purpose in reverting to such a procedure which "would merely postpone an effective solution which has already been too long delayed.

"This treatment of American citizens, wholly unjustifiable under any principle of equity or international law, is a matter of grave concern to this government," Hull observed. "These long-standing matters must of necessity be adjusted if the relations between our two countries are to be conducted on

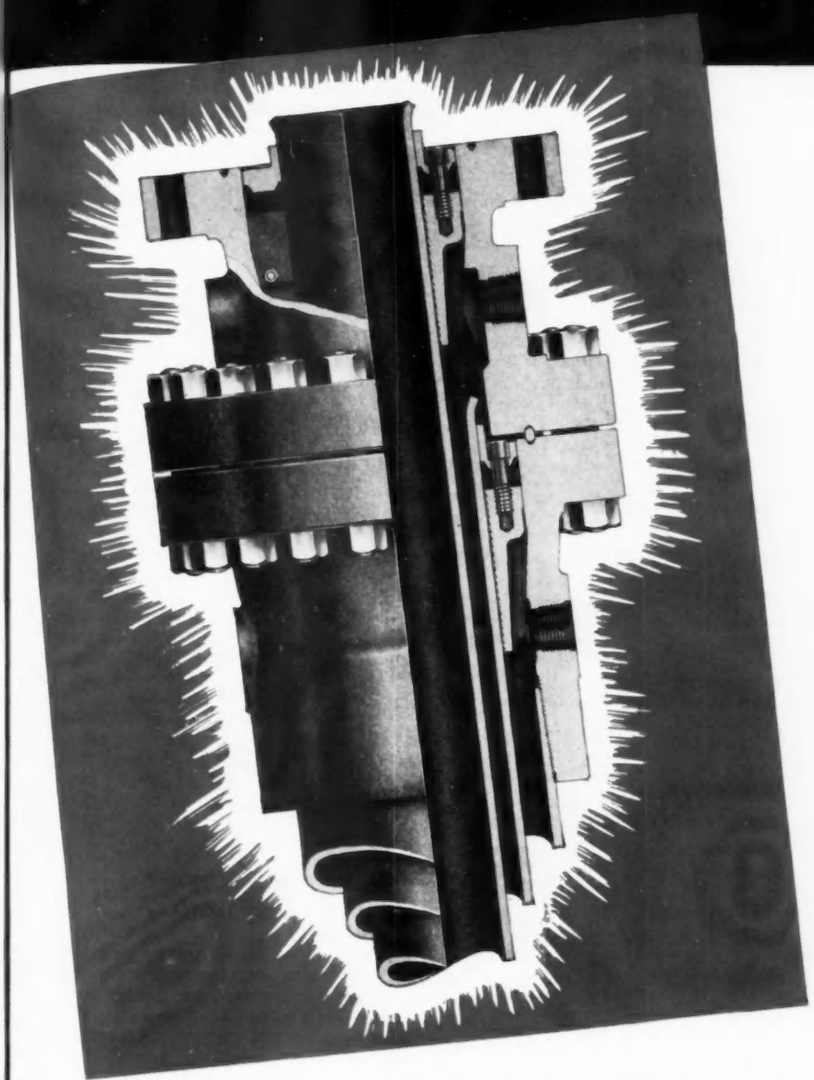
BARCO MASCOT

So far as is known, Martin, 6- or 7-year-old Colombian lad, is the only member of the hostile Motilone Indian tribe ever to feel the effects of civilization. Claimed as mascot by both Petrolea and Rio de Oro camps on the Barco concession, Martin was adopted by the camps after his capture during a Motilone raid on an oil party. Martin, who still has his baby teeth, doesn't know his age, but is very intelligent and friendly and is picking up English rapidly. After a few tries at riding a bicycle, which he had not yet mastered when the above picture was taken during a visit to Cucuta, he proudly announced in oil field lingo: "Me go like hell." The Motilones live in communal tribal houses in the jungles of the Barco concession and have caused considerable trouble. All efforts to make contacts with them for conversational purposes have been futile.

Here's the New Type "W"

CAMERON CASING HEAD

WITH NEOPRENE SEAL BETWEEN CASING STRINGS



The new low-cost Cameron Type "W" Casing Heads and Spools presented in cross-section herewith round out the Cameron line of well heads.

The Type "W" Casing Head features slip suspension with a neoprene and asbestos seal of the space between the casing strings. As illustrated in the drawing at left, a moulded packing ring and split packing gland are assembled on top of the slips. The packing is compressed by tightening socket head cap screws which screw directly into the top of the slips, thus effecting a pressure-tight seal between the casing strings. Note that there are no threads in the top bore of the housing or spool to be damaged by drilling tools, an objectionable feature of most heads of this general type. Also note that the bolted type gland permits greater gland pressure than is possible with a large screw-type packing gland.

All types of Cameron well heads employ the same casing head housing and spool body, which will accommodate any of the Cameron types of casing suspension. Thus, the operator may install a casing head housing and later select the type of hanger best suited for his particular needs.

Interested operators are invited to write for complete details on all types of Cameron Casing Heads and Spools. An illustrated booklet on the Cameron Closed Pressure Method of Drilling and Completion will also be gladly sent on request.

CAMERON IRON WORKS, INC.

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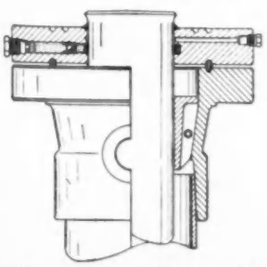
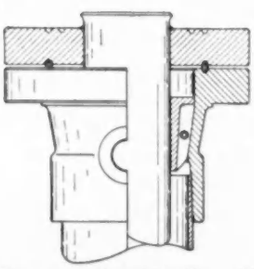
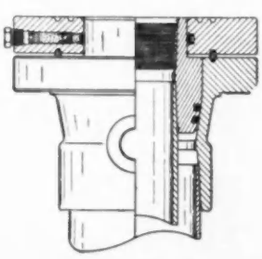
FOUR METHODS OF SEALING AND SUSPENSION INTERCHANGEABLE IN A SINGLE HOUSING



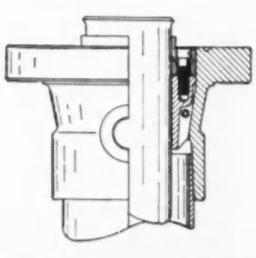
Slip suspension with Type "M" Test-Weld Flange and repackable secondary plastic packing seal.



Slip suspension with Type "J" Welding Flange.



Type "P" Boll-Weevil Hanger with auxiliary repackable plastic packing seal.



Type "W" Slip suspension with neoprene seal.

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For Maximum Safety and Flexibility Every Inch of the Way

a sound and mutually cooperative basis of respect and helpfulness.

Hull's Recommendation

"As an important step towards placing relations between the two countries on this basis, I suggest resorting to the appropriate, fair and honorable procedure of arbitration. Accordingly, I suggest that the two governments agree (1) to submit to impartial arbitration all the questions involved in the oil controversy and to clothe a tribunal with authority not only to determine the amount to be paid to American nationals who have been deprived of their properties, but also the means by which its decision shall be executed to make certain that adequate and effective compensation shall promptly be paid, and (2) either to submit to an umpire, as contemplated by the General Claims Protocol of 1934, the unadjudicated claims falling under the Convention of 1923, or proceed immediately to the negotiation of an *en bloc* settlement in accordance with that protocol."

"With the submission to arbitration of the oil controversy and the adjustment of the General Claims matter," Secretary Hull told the Mexican ambassador, "the two governments would then be in a position to go forward at the same time with the negotiations interrupted by the oil expropriation for a general settlement of all other pending matters. This government earnestly urges this course, as it has consistently done in the past."

Mexican Reaction

Meanwhile, business, political and labor groups in Mexico were harrangued to unite in support of President Cardenas' administration and in opposition to the United States' formal demand for international arbitration of the conflict arising from expropriation of the $400,000,000 oil industry.

The Mexican Revolutionary party and the Confederation of Mexican Workers organized a "committee for the defense of national integrity and for the struggle against imperialism," said committee to devote its time to radio broadcasts, school lectures, and propaganda efforts directed at Mexican residents of the United States in an effort to justify Mexico's stand in the oil controversy.

The federal labor board prepared to notify the expropriated companies they must pay their former employees 117,000 pesos for breaking a collective labor contract with the Petroleum Workers Union.

Mexico yields 3,147,385 barrels in February

Government production of petroleum in February, 1940, according to information obtained from the Mexican Petroleum Administration, amounted to 2,973,385 barrels, of which 365,380 barrels were heavy crude and 2,608,005 barrels were light crude. Production by districts was, as follows: Panuco, 365,380 barrels; Naranja, 164,245 barrels; Poza Rica, 2,013,461 barrels; Isthmus, 430,299 barrels.

To the above should be added production of certain companies unaffected by expropriation in order to obtain total production in Mexico. It is estimated that production of these companies during the period indicated was 174,000 barrels. Thus, total production in Mexico during February, 1940, is 3,147,385 barrels, a figure that is subject to correction at a later date.

Exportations of petroleum during February fell below the average established in the year 1939 and were 1,361,612 barrels as compared with 1,549,813 barrels in January and 1,431,627 barrels in the same period of the preceding year. About 60 percent of these exportations went to the United States and about 25 percent to Italy. This reverses the trend of past months when Italian shipments were often greater than those to the United States. It is believed, however, that some of the exportations to the United States were, in fact, destined for Italy.

Few Poza Rica wells yield majority of Mexican oil

Poza Rica field, credited with only 2 percent of the 1146 producers on record in Mexico, is producing 61 percent of the country's daily average of 116,381 barrels. The accompanying table shows distribution of Mexico's producing wells and production.

Boliva will attempt to expand crude production

Bolivia will spend 73,000,000 Bolivianos, about $2,098,750, to step up oil production in San Andita field and to enlarge refineries with machinery to be purchased from the United States, according to an Associated Press dispatch from LaPaz.

Producing properties being operated by the Bolivian government were taken from the Standard Oil Company of Bolivia for alleged violation of the law.

Exploration activities continue in New Guinea

Netherlands New Guinea Petroleum Company continues active exploration in Dutch New Guinea on a 10,000,000-hectare concession despite the fact that it has spent four years and about $10,000,000 there without establishing commercial oil or gas production.

Terms of the 5-A contract under which the company holds the concession from the government call for selection of 1,000,000 hectares (about 2,470,000 acres) out of the total area by January 1, 1946, and return of the remainder to the government. They also stipulate, according to Trade Commissioner Basil B. Dahl of Batavia, Java, that the company must keep three deep tests going simultaneously on the 1,000,000 hectares after selection has been made.

Thus far two tests have been drilled by the company in the South Vogelkopf area in northwest New Guinea. One went to 1400 meters, the other to 1500 meters. While both encountered traces of oil and gas, salt water also was logged.

Plan early start of prospecting on Timor

Oil Concessions Company of Melbourne, Australia, which has a large petroleum concession on Timor, plans to start preliminary exploratory work soon, according to reports.

Geological conditions on Timor are said to be almost identical with those of Ceram, on which production has been established. Early exploratory drilling probably will not have objective depths greater than 5000 feet and, due to frequent changes in sedimentation, it is likely percussion rigs will be used.

New petroleum exploration is scheduled for Borneo

Exploration permits, under 5-A contract conditions, covering the so-called Kapocas, Boento and Mahakam Delta blocks in the south and east division of Borneo recently were to have been issued to Nederlandsche Koloniale Petroleum Maatschappij and N. V. De Bataafsche Petroleum Batavia Petroleum Company, usually called B.P.M., subsidiary of Royal Dutch Shell, by the government of Netherland Indies. B.P.M. also has requested an exploration permit for the island of Misool, Moluccas Residency.

Eight deep drillings have been made in the Ogan block in Sumatra by Nederlandsche Koloniale Petroleum Maatschappij, but oil has not been struck. This company is actively engaged in deep drilling and geophysical investigation in the marshy areas of Northeast Borneo and plans to undertake deep drillings in several new areas, such as the Bieureun block in Acheen. It is said that, in general, prospects for striking oil in these areas are poor.

The government has reached an agreement with B.P.M., on the basis of Article 5-A of the Netherlands Indian Mining Laws whereby the latter is permitted to prospect for oil, pitch, and other solid and liquid bituminous substances, and combustible gases in an area of 293,760 hectares on the island of Madura, known as the "Madura Coastal Block," and in an area of 93,400 hectares in the Residencies of Surabaya and Malang, for a period of five consecutive years.

Geologist says Germany must finally succumb

Germany already is besieged effectively and must succumb in the end, according to Professor Douglas Johnson, head of the department of geology of Columbia University who recently delivered a paper before the American Geological Society in New York.

Professor Johnson, who was a major in the intelligence bureau during the last World War, concluded that western powers can deprive Russia of three fourths of her oil by seizing Barum and Baku, both within reach of Allied armies concentrating in the Near East.

Standard suspends Coles Bay wildcat in Alaska

Alaskan exploration suffered another disappointment recently with suspension of operations at 7600 feet in Grammar 1, joint test of Standard Oil Company of California, Union Oil Company and Tide Water Associated Oil Company in the Coles Bay district. The test reported only insignificant showings to that depth. Standard, which is doing the operating, has not announced a second location or plans to resume drilling later in Grammar 1.

[For a detailed article on Alaskan operations see THE OIL WEEKLY, March 18, page 185.]

U. S. FIELD OPERATIONS

Illinois

To test Trenton lime in Centralia townsite field

Centralia, Ill.—A long-rumored Trenton lime test in the Centralia townsite pool was under way last week. It is J. Hal Jones et al's Lena Haack 1, Lot 4, Block 1, Kohl and Warner subdivision, Clinton County. Deepest production in the pool at present is the Devonian lime, and Jones' venture is the first to explore deeper levels. The test, in the south part of the field, was drilling at about 3280 feet and had drilled through the entire Devonian section which carried saturation comparable to most Devonian completions in the field.

Trenton production has not yet been uncovered in the state's new oil exploration; but for several years the formation has been yielding oil in small quantities in the shallow Dupo field of St. Clair County, where the horizon is topped at about 500 feet, and in the Westfield pool of Clark County, where it is found at 2260 feet. The Trenton is expected at between 3700 and 3900 feet in the Centralia field.

Two current tests in the Illinois basin are either in or through the Trenton. Carter Oil Company's James Seaman 1, NW NE SW 35-12n-7e, Coles County, failed to find saturation in the Trenton, topped at 4061 feet, and was drilling at 4881 feet in cherty dolomite of St. Peter. It cored a 3-foot show of live oil 3 feet after the St. Peter was entered, at 4691-95 feet. No further cores have been taken. Pure Oil Company's Stella Billington 3, C E½ SE NE 27-9n-7e, Cisne field, Wayne County, was drilling in the Trenton at 6530 feet. No shows had been encountered. Only productive level in the Cisne field is the McClosky lime at about 3200 feet.

A Jackson County wildcat, southwest of Murphysboro, caused a mild stir in the Basin when it was reported Benoist saturation had been drilled at 745-63½ feet with cable tools. The well is W. R. White's Michaels 1, SE NW NW 18-9s-3w, which had 8-inch casing set to 745 feet to test the show. A light stain in the Cypress at 695-710 feet was also reported. There is no production in the county.

Pure Oil Company has spudded a new Jasper County wildcat, 3 miles south of its recently completed pool opener, Warren Consolidated 1, which it also is offsetting with a new test. The wildcat test is M. P. Redmon 1, Section 16-5n-10e. The Warren well was completed in McClosky lime.

Marion County interest was focused on a wildcat venture, W. F. Lacey Thurman 1, C SE SE SW 15-3n-2e, drilling at 1201 feet with rotary tools. It is two miles north of the Tonti township field, and about 4½ miles north of the Lake Centralia-Salem field.

In the Lake Centralia-Salem field, The Texas Company, which has completed 13 Devonian wells there in the past week, was swabbing and bailing a north McClosky outpost. Altvater 1, SE 9-2n-2e, which recovered about 18 feet of saturation topped at 2115 feet.

None of the Lake Centralia-Salem field's recent completions have had the large initials recorded by completions of a few weeks ago. However, development is now pushing to the southwest where strips, schoolhouse and church leases are seldom found as they were in the north central part of the field where Devonian development originated.

In Edwards County, the first Waltersburg sand producer in the new McClosky field 2 miles south of Albion, Thurman Hill & Sam Jarvis' Harry Wick 1, NE SE SE 24-2s-10e, pumped about 260 barrels in 24 hours from pay at 2374-87 feet. A twin well to the McClosky, A-1 Wick, was drilling at 2198 feet. What appeared to be the second McClosky producer in the field was Superior Oil Company's Wood 1, NW SW NW 9-2s-11e, which set casing to test pay at 3115-29 feet. It also cored Waltersburg saturation at 2372-93 feet.

In White County Superior Oil Company's Greathouse 2, NE SW NE 4-5s-14w, made 150 feet of oil in 23 minutes on a drill-stem test of Bethel (Benoist) sand at 2710-25 feet. A week ago the county's first Benoist sand producer was completed as a 150-barrel well in Section 9-4s-14w.

Magnolia Petroleum Company's Lettie Jones 1, NE NE NE 10-3s-2e, Jefferson County wildcat, was drilling at 3620 feet and apparently will be taken at least to the Devonian lime.

Indiana

Two wildcat tests find Devonian lime dry

Evansville, Ind.—Ohio Oil Company's Philomenia Holtzman 1, SE SE 27-4s-4w, Harrison Township, Spencer County, was plugged at 2562½ feet, having only a slight show in the Devonian from 2237½-2242½ feet.

Six miles north of Worthington, Owen County, Harry Schwarz et al's Everhardt 1, SE SE 21-9n-5w, also found the Devonian dry and was waiting on orders at 1627 feet.

Two tests found the Pottsville sand (Pennsylvania age) dry in the Mackey area of Barton Township, East Gibson County, near where Al Walker last year had a light Pottsville producer that promised a new pool. Shut down for orders as operators considered deepening to the McClosky, they are Al Walker's Oscar Schmidt G-1, NE NW 24-3s-9w, south of the discovery, and C. B. Sowell's Schoonover 1, SE SW 13-3s-9w, north and west of the discovery.

Northwest of Al Braden's Simpson 1, recent St. Louis lime discovery, W. C. McBride, has spudded William Blair 1, SE SE NW 13-2s-12w, Montgomery Township, Gibson County. Loma Oil Company is contractor.

In the Hatfield area of Spencer County, Ray Johnston et al located Amy Powell 1, NW SW SW 28-6s-7w, a mile northeast of Trio Oil Company's Frank Swallow 1, completed last year for a light Waltersburg sand well. C. C. Whitlock, Terre Haute, is contractor.

Deepening in the Waltersburg with several hundred feet of oil reported in the hole was C. L. Snell, Trustee's Prudential Life Insurance Company 1, SW NW 7-7s-7w, Luce Township, Spencer County, about ⅓ mile west of Sycamore Oil Company's dry hole drilled through the McClosky last year.

In the Rockport area of Spencer County, Troy Refining Company was rigging up cable tools for C. Mackey 1, SW SE 31-7s-6w, ½ mile south and west of O. L. Sturbois' Boyd 2, an oil well.

Abandoned through the McClosky at 1760 feet was Oakland City Development Company's Oakland City College 1, SE SE 13-2s-9w, Columbia Township, Gibson County.

In Randolph County, John Seip's A. Johnson 1, NE NW 9-19n-13w, was preparing to acidize Trenton lime, topped at 1025 feet with saturation at 1040 feet.

Kentucky

Western Kentucky experiences increase in wildcat activity

Owensboro, Ky.—A healthy revival in Western Kentucky wildcat activity took place last week.

In Daviess County, north of Maceo, Jess Ashby located Dickson 1, Section 1-Q-30, near where Hart & Hart and John E. Williams last year got a Jett sand show in Nance 1.

In McLean County, 3 miles south of Calhoun, O. D. Vickers spudded C. S. Vickers 1, wildcat several miles from production.

Near Robards, Henderson County, after several months' shutdown, L. Boyce's Arabella Walker 1, was drilling below 2260 feet for a McClosky test. East of Fordsville ¾ mile, Ohio County, Jack Randall spudded Kissinger 1.

In the Glenville area of Daviess County, Jack Teller's Roy Beard 1, Section 18-N-28, was abandoned after getting blue lick sulphur water at 1950 feet. In the Utica pool Stewart & Snyder's A. A. Westerfield 5 abandoned at 1719 feet.

In Muhlenbery County, Walter Hagan's Drake 1, Section 24-I-31, wildcat 4 miles east of Belton, was drilling about 1900 feet.

In McCracken County, 4 miles southeast of Paducah, Pascal Pass' Shephard 1, Section 2-F-12, was drilling at 1930 feet.

Kansas

New Arbuckle lime area opened near Kraft pool

Wichita.—George W. Hinkle opened a new producing area 1 mile northeast of Kraft (Arbuckle lime) pool. Krout-wurst 1-A, C N½ NE SE 34-16-11w, pumped 1½ barrels of oil per hour after acidizing with 500 gallons. The Arbuckle pay, topped at 3394 feet, was drilled to 3402 feet.

New producing horizons were opened in Barton and Rice counties. Vickers Petroleum Corporation's Behnke 1, CWL NW NW 25-18-10w, opened initial Arbuckle lime production in the Orth East pool, Rice County, on completing for 210 barrels daily. Brunson, Bennett, Mermis et al's Krier 2, NEc SE 30-16-11w, flowed 10 barrels hourly from Oread series at 2845-54 feet, deepened however to the Topeka lime at 2955 feet. At this depth gas flow was estimated around 25,000,000 cubic feet. Some oil was showing.

Duwe & Farris extended Stoltenberg pool, Ellsworth County, ⅞ mile west on completing Adamek 1, C S½ SW NW 17-16-10w, for a pumping potential of 566 barrels daily. Arbuckle lime was acidized at 3365-84 feet.

Lauck & Moncrief's Ehler 1, CWL SW NW 35-16-10w, has been designated as the Stolenberg Southeast pool. It was recently completed in the Arbuckle lime for 911 barrels. Aylward Producing Company's Bird 1, C SE NW 33-18-15w, Barton County, has been classified as the Bird pool. A potential of 27 barrels was established, pay being in the Basal sand.

Magnolia Petroleum Company extended Iuka pool, Pratt County, ½ mile east at Beck 1, C W½ NW NW 12-27-13w, which filled with oil in less than 8 hours. Simpson Dolomite at 4295 feet may be acidized before testing. Harbar Drilling Company et als Shutts 1, C N½ NW NE 32-11-17w, pumped 23 barrels of oil and 10 percent water, in 8 hours after acid. Located ¼ mile south of Bemis pool, Ellis County, this extension logged Arbuckle lime at 3600-3628 feet. On the northwest edge of Walters pool, Gulf Oil Corporation's Oliver 1, C N½ NE NE 10-12-18w, pumped 13 barrels of oil and 3 barrels of water in 8 hours, finally completing for 38 barrels of oil and 9 barrels of water in 24 hours. Arbuckle lime at 3667-71 feet was treated with 2000 gallons of acid.

Sunray Oil Company abandoned their wildcat test in Sedgwick County after hole filled with water from Mississippi lime at 3564-90 feet. McMinn 1, CWL NW NW 14-29-2w, 6 miles north and 2 miles east of Latta pool, failed to show in Arbuckle lime at 4030-55 feet. South 7½ miles of Valley Center pool, G. A. Fuller et als Stilt 1, CSL SE NE 21-27-1w, pumped 3 barrels of oil and 20 barrels of water per hour for 60 hours. Kansas City lime at 2652-2906 feet was acidized.

Sinclair Prairie Oil Company's Sellens 2, NE SW SW 15-15-13w, one location northeast of production in Fairfield pool, Russell County, pumped 200 barrels of oil in 8 hours from Arbuckle lime at 3329-33 feet. On an 8-hour flowing gauge, Skelly Oil Company's Rein 9, C N½ NE SE 8-15-13w, east edge of Coralena pool, made 702 barrels from Lansing-Kansas City lime at 2985-3097 feet after acidizing with 11,000 gallons.

Mitchell Drilling Company capped a wild gas well which raged unchecked for several days in the Lyons gas field of Rice County. Sangster 1, C E½ SE SW 11-20-8w, was killed with mud and water, after laying a 2-mile gas blanket over the area and forcing the closing of nearby roads and mines.

Aladdin Petroleum Corporation may open a new pool in McPherson County. Bitikofer 1, CNL NE NW 1-20-1w, east of the abandoned Wenger pool, cored saturation at 2895-2916 feet in the Mississippi. Standard tools were moved in to drill plugs. Sunray Oil Company brought in a large producer in Bornholdt pool at Lindquist 1, CWL NE NW 29-20-5w, on the east edge of production. After penetrating 1 foot into Chat horizon at 3365 feet, the well flowed 120 barrels the first hour and averaged 100 barrels per hour on a 4-hour test.

Stanolind Oil & Gas Company staked location for a wildcat deep test in Kearny County, Western Kansas. Judd 1, C SE SE 15-21-38w, located on a 32,000-acre seismograph block, is 25 miles from nearest oil production.

Initial Lansing Kansas City lime production was discovered in Neidenthal pool, Russell County. Phillips Petroleum Company completed Boxberger 1, NWc SW NW 24-14-15w, for 169 barrels daily.

Lario Oil & Gas Company staked Mehl 1, C E½ NE SE 35-16-10w, 1 mile southeast of Southeast Stoltenberg pool, Ellsworth County. Northeast ½ mile of Kraft pool, Barton County, National Refining Company et al's Kraft 1, C W½ NWc 2-17-11w, was moving in materials. Ackley & Holl will drill with rotary at Wilkens 1, NWc NE 28-18-6w, 12 miles northwest of Bornholdt pool and 8 miles east of Geneseo pool, Rice County.

Northwest 2½ miles of Graber pool in McPherson County, C. L. Carlock will drill Hoyer 1, C SE NW 6-21-1w. W. H. Gaddis et al have a rotary rig at Shannon 1, CEL SE SW 11-27-10w, 4½ miles northeast of Cunningham pool, Kingman County, and ½ mile east of a dry hole which went to 3576 feet. Location was made by W. McKnab for Lemert 1, CWL NW SE 11-34-4e, 6 miles west of Rahn (Bartlesville sand) pool in Cowley County. Central Petroleum Company et al have derrick up at Lynn 1, NEc SW 14-11-18w, 1 mile west of Burnett pool, Ellis County.

Oklahoma

Marshall County wildcat flows 2400 barrels in 15 hours

Tulsa.—Pure Oil Company's Little 1, C W½ NE SE 28-5s-7e, Marshall County, flowed 2410 barrels of 37.5-gravity oil in 14¾ hours. Flowing 150 barrels the first hour, 155 barrels the second hour with 2,500,000 cubic feet of gas, the well was washed with water for 7½ hours, taking the hole to 4961 feet. During a 9-hour period, flow averaged 163 barrels an hour while gas climbed to 25,000,000 cubic feet. Operators will attempt to wash down to the plug-back depth of 5100 feet and try various chokes to obtain the most efficient gas/oil ratios before making a 24-hour test. Production is from the Tulip Creek zone with perforations at 4857-5100 feet. Two 10,000-barrel and three 1,000-barrel storage tanks were erected prior to testing. Pure Oil Company has approximately 22,000 acres in Marshall, Johnston and Bryan counties, surrounding the discovery.

Five miles southwest of this pool opener, Johnson - Kemmitz Drilling Company et al's Neff-Godfrey 1, SW SE NE 15-6s-6e, filled 120 feet with brackish water after perforating at 4409-10 feet in the McLish section. A plug was set at 4200 feet and perforations will be made in the Tulip Creek zone.

Two Lincoln County pool openers took production tests. Portable Drilling Company's Teter 1, NWc SW 24-17n-2e, near Vinco, flowed 591 barrels in 24 hours. Gas gauged 5,400,000 cubic feet through perforations in Hunton lime at 4500-10 feet. This discovery is 6 miles east and slightly south of Coyle pool in Payne County.

Summit Drilling Company et al's Cleer 1, C W½ SE SW 6-15-5e, a community discovery, flowed 483 barrels of oil the first 24 hours and 304 barrels the following 12 hours through tubing. Six miles northwest of Davenport pool, Lincoln County, on a 1200-acre block, it is producing from the Prue sand.

Margay Oil Corporation failed in its attempt to find production between East Konawa and Wofford pools, Seminole County. Reed 1, NW NE NE 12-6n-6e, was abandoned in dry Wilcox sand at 4095-4106 feet. Thompson Brothers' Meadors 1, NEc 23-9n-9e, which earlier showed possibilities of opening a new pool in the Fuhrman area of Hughes County, was abandoned after considerable testing. It made 15 barrels of oil and 25 barrels of water in 24 hours from Cromwell at 3230-48 feet. Dry Wilcox was also cored at Eason Oil Company et al's Blackburn 1, NWc SW 19-6n-4e, topped at 3864 feet. The outpost is between production in the West Asher and Asher pools, Pottawatomie County.

Minor shows were reported at Continental Oil Company's Krichmar 1, SEc NE 28-28n-5w, 4 miles north of Medford, Grant County. First Wilcox sand was logged at 5427 feet, and a core at 5449½-54 feet showed oil staining and gas. Drilling was resumed below 5475 feet.

Gled Oil Company et al have apparently extended Hobart pool one location north at Watkins 2, NWc SW 20-7n-17w. A 400,000,000-cubic-foot gas show was cemented off at 1066 feet, and saturation picked up at 1070-1098 feet in the Pontotoc. It sprayed

some oil with over 1,000,000 cubic feet of gas. Operators will drill to the base of this lime formation and then acidize for a test.

Sinclair Prairie Oil Company resumed drilling Watkins 1, SE NE NW 19-7n-17w, ¼ mile northwest of production in Hobart pool, Kiowa County. It was making hole below 1425 feet in lime. The same operator's German 1, SW NW NW 1-6n-13w, a Caddo County wildcat, was drilling below 10,950 feet in dolomite.

Kerr-Lynn Drilling Company located Kavanaugh 1, C W½ SW NW 1-15n-4w, a wildcat between Crescent and Edmond pools, Logan County, and near the town of Navina.

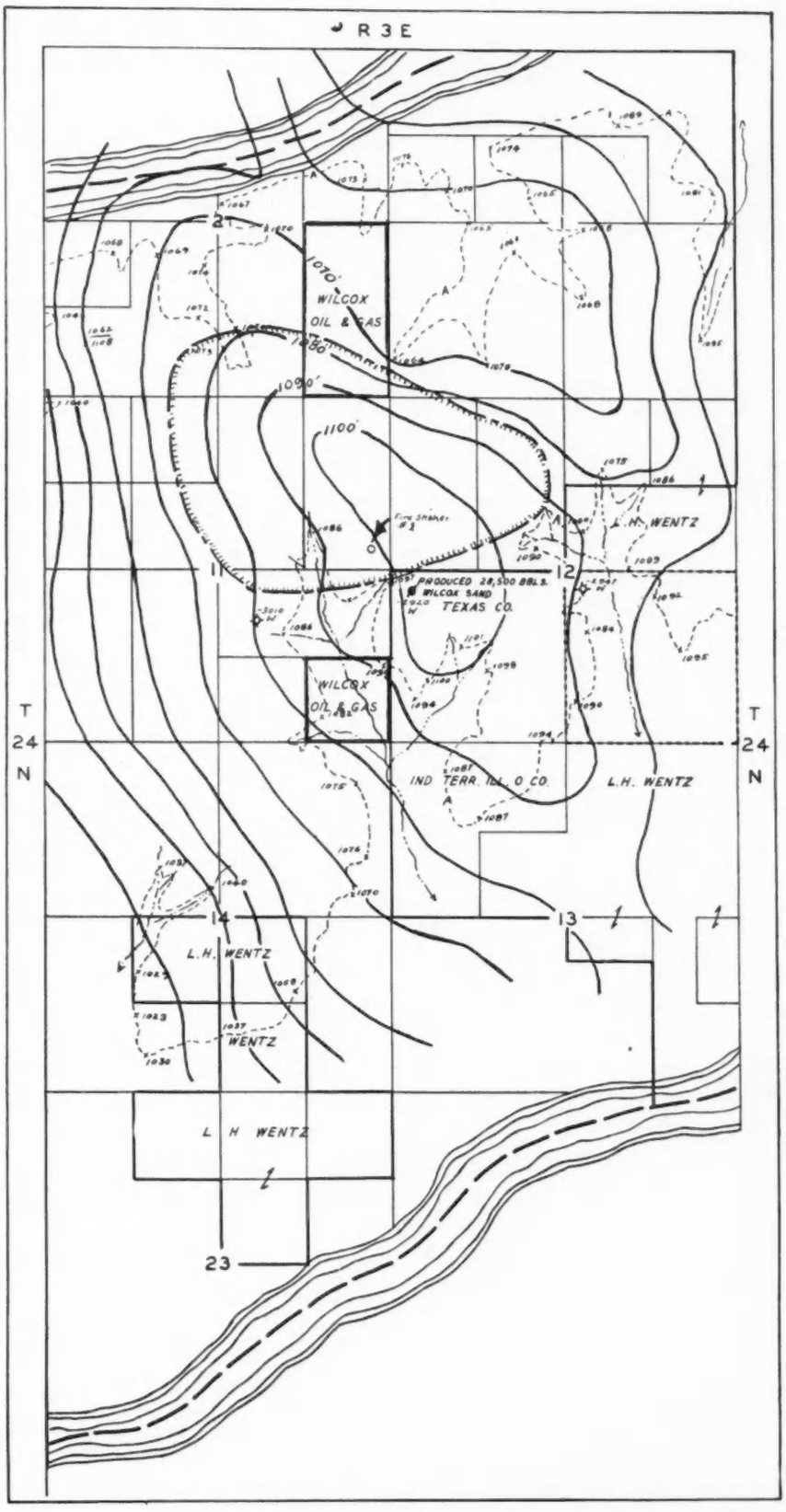
The Texas Company extended production in the Coyle pool, Payne County, ½ mile northwest at Burroughs 1, C E½ NE NW 11-17n-1e, which flowed 211 barrels in 8 hours through casing while drilling. First Wilcox sand was topped at 4927 feet and drilled to 4945 feet. Operators may deepen before completing.

Senate approves bill for tax on Osage production

Legislation authorizing Oklahoma to levy a gross-production tax upon oil and gas produced in Osage County, to be paid, in the case of production from Indian lands, by the Secretary of the Interior, was passed by the Senate April 10.

The Senate amended the bill to provide for a maximum rate of five percent, instead of the three percent provided by the House of Representatives, and stipulated that a percentage of the state's revenue from the levy should be delivered to Osage County for the construction of roads and schools.

Purpose of the legislation, it was explained in a report filed by the Senate Committee on Indian Affairs, is to relieve the Osage Tribe of an extra tax of one percent on their tribal royalties, imposed in 1921, as a result of which, it is claimed, the Osage Indians have paid more than $1,000,000 into the county treasury and more than $3,000,000 into the state treasury. The legislation, it was pointed out, would give to the Indian lands the same rate of tax as is paid by the oil companies operating in Oklahoma.



Helmerich and Payne and Blackwell Oil & Gas Company have staked location for wildcat in Noble County, Oklahoma, Lucy Fireshaker 1, SEc NE 11-24n-3e, on a structural trend between Masham and Hardy pools. The companies have assembled 3000 acres. Inside holdings are leased by Wilcox Oil & Gas Company and L. H. Wentz with but one quarter section unleased. Surface contours drawn from outcrops (light dotted lines) and seismograph surveys (shaded area) disclosed the prominent structure only tested on the flank by The Texas Company, which took over Comar Oil Company's Buffalohead 1, NWc SW 12-24-3e. This test, drilled in 1923, topped the Wilcox sand at 3689 feet and found 8 feet of saturation at 3951-59 feet and the remaining sand carrying water. Plug-back depth was 3968 feet in lime. Rating 71 barrels initially, this well produced 28,500 barrels of oil.

The Texas Company's Miller 1, NWc SE 12-24-3e, drilled in 1923, was dry at 4150 feet. Howe 1, SE NW SE 12-24-3e was dry at 4300 feet.

A seismograph survey indicated 150 feet of closure and the shaded area represents the approximate area covered by the structure. Wilcox sand is expected to be of normal thickness, 80 to 90 feet.

Surface contours are drawn in heavy solid lines. All acreage unnamed is controlled by Helmerich and Payne, Inc., and Blackwell Oil & Gas Company.

North Texas

Gulf Oil Corporation enters Ringgold deep area

Wichita Falls.—Gulf Oil Corporation has contracted to purchase a large portion of the prospective producing acreage adjacent to the prolific Bend lime discovery completed March 20 by W. B. Omohundro et al in the Ringgold sector near the Montague-Clay County line. The trade involves the Worsham pool holdings of Walter H. Gant, Ardmore operator. This deal is likely to expedite completion of negotiations carried on for some weeks by other majors for acquisition of the Omohundro 5704-foot producer and the supporting block of 1500 acres.

A consideration of $500,000 and an over-riding royalty will be paid Gant, subject to title approval, for his leases on the Worsham and Spring ranches, aggregating 7400 acres. The acreage involves a west offset tract to the Ringgold producer, deepest in North Texas, and 7 Strawn producers in the Worsham pool. Two of the latter are in the 3400-3500-foot pay, and the remainder produce from lower Strawn near the 3900-foot level. These wells have an allowable of 198 barrels daily, and are connected with Magnolia Pipe Line Company's carrier. Gulf Oil Corporation pioneered the upper Strawn development on the Worsham ranch, completing its first well January, 1923. Development was concluded in 1926, resulting in 4 failures and 3 pumpers. Lease was forfeited because of drilling requirements. Gant obtained the lease from the Worsham Estate in 1934. His initial efforts resulted in 3906-foot and 5137-foot failures, but Worsham 3 proved the lower Strawn in May, 1937. The deep failure was successfully plugged back later that year for a pumper in the 3400-foot pay.

The Worsham pool is on a large deep-seated structure. The Omohundro deep strike is 3 miles northeast of this production, and is considered to be on the flank of same, thereby making the entire Worsham structure attractive for prospecting in the Bend and the Ordovician zones.

Montague County Tests

Montague County occupied the most attention due to wildcats and extension tests reaching critical depths. A new Bend lime wildcat near the west edge of the county involves Harvey Brothers and Sinclair Prairie Oil Company's 6000-foot obligation to be drilled near center of W½ Block 10, Jack County School Lands Survey, 3 miles west of Stoneburg and 7 miles south by east of the Omohundro deep strike. This new project is near a shallow failure drilled in 1923 by Mascho Oil Company on the Howard tract, Block 29, Limestone County School Lands Survey, with gas logged at 1515-18 feet and 1581-90 feet.

The second test given the Bonita deep pool, eastern Montague County, drilled below the oil pay without showing oil or gas, while a northeast outpost is to be sought by Magnolia Petroleum Company's M. M. Gilbert 1, southwest corner of 222-acre lease, C. G. Bryant Survey. Sinclair Prairie Oil Company's Doty 1, 840 feet west of its 5249-foot Bend discovery, encountered a dip in the structure, and was coring at 5290 feet in dry shale and conglomerate. At the latter depth it was 23 feet below total depth of the producer. The company will carry the test to the Ordovician should the Bend section fail to produce. A. P. Howard 2, situated southeast of the discovery, was drilling at 4990 feet, and reported to be checking favorably on the upper markers.

Walter H. Gant and Continental Oil Company's Brown 1, 5½ miles northeast of Bowie, renewed its bid to become the deepest oil well in the district in filling about 300 feet with oil along with water after using 6000 gallons of acid at 6253 feet in Bend lime, topped at 6112 feet. The hole was plugged back from Ellenburger at 7288-7341 feet, and the water is credited with having broke through defective plug.

William T. Payne et al's Baker 1, a mile northwest of nearest Bend production in the Nocona deep pool, was awaiting drill-stem test with comparatively thin section of oil saturation recorded in drilling to 5300 feet. It is about 34 feet low on the Bend marker, topped at 5246 feet. A successful oil completion would stimuate development to the west of the pool proper. Ramsey Petroleum Corporation's Magee 1, near southeast edge of the Montague townsite, was drilling at 4150 feet, recording nominal oil saturation at intervals in the Strawn.

Holt Outposts Fail

Gibson-Jennings and Sinclair Prairie Oil Company's two outposts and a deep inside test for the Holt field, Montague County, failed to make producers. The partnership's Holt 29, Block 45, Kaufman County School Lands, and an offset to Canyon production, quit in solid granite at 3348 feet. It is considerably higher on structure than a previous deep test that was also carried to granite. Holt 1-C, NWc Block 36, was abandoned at 1943 feet, and J. G. Howard 1, Block 90, tested dry after landing casing on top of oil saturation in Canyon at 1776-84 feet.

Alexander Goldsmith et al's Republic Natural Gas 1, northwest corner of Block 14, Parker County School Lands, and within the shallow Petrolia field, Clay County, reached solid granite near the 2600-foot level. It is about 2 miles southwest of an old failure that quit in granite at 4289 feet.

Amerada Petroleum Corporation's Goodpasture 1, northwestern Wilbarger County projected Ordovician test, was drilling at 3960 feet, having cased off oil saturation recorded at 3230-52 feet in landing 7⅝-inch protection string at 3549 feet. In Foard County, Ohio Oil Company's Rasberry 1, C SW NE S.P. Section 26, was awaiting orders at 5004 feet, having fulfilled depth contract.

Marginal producers from the Strawn zone in the southwest portion of the K-M-A field are to be deepened to the Ellenburger lime on the strength of the showing made by Fain-McGaha Oil Corporation's Eph Griffin 16-B, Lot 3, W. H. Spillers Survey. The test was setting up spudder to make a swabbing test of oil saturation at 4352-89 feet, with hole bottomed in dry lime at 4486 feet. Top of Ellenburger was called at 4315 feet. Formation tester used at 4352 feet yielded 650 feet of oil in 20 minutes. The well failed to flow when plugs were drilled from 7-inch pipe at 4352 feet, but the gas volume was adequate to return a portion of the fresh crude used for circulation, and the oil column rose to the 3000-foot level.

Magnolia Petroleum Company is the first of several concerns that will try for production in this new pay, having contracted with Denver Drilling Company to deepen Minnie Thom 3 on east edge of W. H. Spillers Survey and 1⅝ miles southeast of the prospective Ellenburger producer. Thom 3 was completed last February at 3854 feet, and was pumping 15 barrels oil and 35 barrels water on last gauge. Production from the Ellenburger will be "spotty" within the K-M-A sector, as 15 tests have been drilled to this level with negative results, including the Strawn discovery, which logged 1140 feet of Ellenburger in drilling to 5430 feet.

The curtailment of crude purchases to 75 percent of the allowable effective April 1 by one of the largest buyers at K-M-A came unexpectedly to operators as 19 tests were authorized for that week. This enlarged drilling program will add to the unconnected well situation, as other buyers are near the saturation point on crude runs.

Development of the eastern Baylor County Canyon lime area discovered March 30 by Hall-Jordan Oil Company et al's Green 1, which swabbed and flowed 184 barrels oil and small volume of water on 6-hour completion test, at 3061-64 feet, is to follow with the British-American Oil Producing Company taking the initiative. The latter contributed the acreage for the drilling of the discovery, and is moving in rig to the northwest to drill a south offset to its Green 1-L, a 4304-foot failure that almost made a producer in plugging back and acidizing the Canyon zone.

Magnolia Petroleum Company's Ramsey 4, east outpost for the Walnut Bend field, Cooke County, assured an extension in yielding 7 stands of oil in 20 minutes when tester was used in upper Strawn at 4711-51 feet. This shallower pay appears to thicken on the flanks of the structure.

Wilbarger County Strike

The North Texas producing district was enlarged to the northwest with a deep lime strike on a geophysical prospect in Northwestern Wilbarger County. The discovery was indicated when Amerada Petroleum Corporation's Goodpasture 1, C SW SW H&TC Section 35, Block 15, flowed high-gravity green oil when formation tester was used on oil sand section at 3963-75 feet with hole bottomed at 3995 feet. The oil zone is tentatively identified as Canyon age. Nearest production is the Frederic field, 8 miles east and in Tillman County, Oklahoma.

The Goodpasture prospect will pass up the deep lime pay for the time being, and fulfill original plans to drill to the Ordovician. An oil sand logged at 3230-52 feet in the Cisco series indicated production possibilities, but was cased off without a test in landing a protection string of 7⅝-inch at 3549 feet. The company owns a block of 5000 acres in the area. Nearest deep test is F. A. Lain et al's Coffee 1, NWc H&TC Section 44, Block 15, which was junked at 6212 feet in June, 1937.

West Texas

Interest in Lower Permian centers in Ector-Andrews

Midland.—Exploratory tests to the Lower Permian, currently centering upon Ector and Andrews counties, are being followed with greater interest than any specific trend play in West Texas. The Holt pay, which yields oil near the 5200-foot level on the west edge of the North Cowden field from five completions, is responsible for the deep drilling. Another producer was in prospect late last week, while a new test was authorized.

Barnsdall Oil Company's Blakeney 1, SE NE PSL Section 2, Block A, logged broken saturation and light porosity in coring the Clear Fork, or Holt lime at 5175-5215 feet, and will take in more section before landing pipe. Llano Oil Company's Holt 2-A, NWc NE PSL Section 18, south offset to the most productive deep well is starting. The first try for Holt production near the mid-section of the North Cowden structure may be made by Sinclair Prairie Oil Company's Holt 1, SW SE PSL Section 20, Block A. The company purchased this 40-acre site last February. It is offset by small wells in the regular pay.

The first attempt for deep production in the Jordan sector of the Judkins-Penwell field, southern Ector County, is to be undertaken by E. E. Fogelson et al on University acreage. Location has not been designated, although it will be assigned to Section 7 or 8 and within the regular pay area. M. A. Grisham et al's Cowden 1, northwestern Ector County wildcat, found the Holt lime barren in fulfilling original depth contract at 6010 feet, and is likely to be carried to the Ordovician. Ralph Gill et al's Parker 1, fourth wildcat in Ector County to test the Holt with negative results, was abandoned at 5760 feet.

In Andrews County, Richmond Drilling Company and Tom Hunter's University-Atlantic 1 became the second wildcat in the county to find the Holt zone barren and is drilling at 5580 feet on a new contract. Illinois Oil Company's University-Atlantic 1 is a Holt project and was drilling at 2400 feet.

A geophysical prospect in eastern Yoakum County, centering four miles east of the Waples-Platter one-well pool, is slated for a Permian test by Amerada Petroleum Corporation, with Plymouth Oil Company sharing in the play. The former has 2880 acres that were acquired for $5 per acre subject to the starting of a test in Section 619 or 620, Block G, by mid-July, else an additional payment of $2.50 per acre will extend the leases for six months. The drilling obligation originally was assumed by Ross Williams and associates.

Development of the Wasson field, most active drilling center in the southwest, continues at a brisk pace. All work is within or adjacent to the productive limits. All operators have undrilled locations, with some of the larger acreage owners faced with several years of competitive drilling so are reluctant to try for major extensions. The two buyers of outside oil are restricting their runs to 90 percent of the allowable due to pipe line congestion.

Combination of nitro shot and acid gave Gulf Oil Corporation's Goldsmith 267, inside location for the Goldsmith field, Ector County, an initial rating of 4850 barrels of 37-gravity oil at 4177 feet. The extension of the south end of the field to the east is to be sought by Everts Drilling Company's Johnson 1, NW SE T&P Section 30, Block 43.

Jones County discovery yields 6 barrels an hour from Cook

Abilene, Texas.—Production test given the Cook sand pool discovery in south central Jones County, Thos. D. Humphrey et al's W. V. Triplett 1, J. J. Hughes Survey No. 201, rates the yield at 6 barrels of 39-gravity oil hourly. The well flowed by heads when agitated with pump from pay at 2185-93 feet. It is 3 miles northwest of the Hawley field, and near the northeast bank of the river. Humphrey et al hold lease on 514 acres, and will start a second test to the east.

Minor oil and gas showings have been passed up by other wildcats in Jones County. Lewis Production Company's Ramsey 1, NEc T&P Section 80, Block 14, gave encouragement with shows in broken sandy-lime at 1703-21 feet, but developed a hole full of water at 1739-49 feet. Pipe will be lowered to deepen. John Farrell et al's Reid 1 logged light oil show in lime at 2322-26 feet, and was lowering pipe at 2429 feet. In the same wildcat sector, Irion Mountain Oil Company's Wiley 1 recorded oil show at 2390-94 feet, and was drilling at 2430 feet.

In Taylor County, Texas Pacific Coal & Oil Company's Reidenbach 1, Block 19, Grimes County School Lands, League 146, encountered little gas at 2635-45 feet, and was drilling at 2790 feet.

Protest Panhandle gas use for carbon black

Northern Natural Gas Company protested the use of gas from certain Panhandle wells for carbon black at a hearing before the Texas Railroad Commission last week, alleging such use violated the conservation statutes.

The company argued that gas produced from 27 wells is sweet gas within the meaning of the statute, and that its use for carbon black is specifically forbidden. It appeared from the argument that there would be no other market for the gas and the carbon-black plants affected would be forced to close down.

Texas permits

The Texas Railroad Commission last week approved permits for drilling 452 wells, 110 more than were allowed the week before.

Operators in the East Texas field were permitted to drill 20 wells with 11 in Upshur, 7 in Gregg and 2 in Rusk County. Ten locations were reported from the remaining part of the East Central Texas area.

West Texas led the state with 120 permits, including 40 in Yoakum, 27 in Ector, and 10 in Ward County. West Central Texas producers reported 72 locations, including 21 in Comanche, 13 in Jones, 13 in Shackelford and 11 in Callahan County.

Permits for drilling 45 wells were granted in Southwest Texas, including 13 in Webb and 12 in Starr County. Gulf Coast operators listed 9 locations. The commission approved 111 locations in North Texas with 36 in Wichita, 31 in Archer and 10 in Clay County. There were 65 permits reported from the Panhandle, with 29 in Gray and 18 in Carson County.

Texas to receive bids on school lands

The Texas state board for leasing mineral lands has announced that bids will be received May 7 on the following tracts of state school lands:

Clay County—Tract 1, Block 2, Big Wichita River, 80 acres, $2000 cash and not less than ⅛ royalty.

Clay County—Tract 2, Block 2, Big Wichita River, 100 acres, $2000 cash and not less than ⅛ royalty.

Potter County—Mineral surveys Nos. 5 and 6, Block CR, Canadian River Bed, one tract of 1930 acres, $8000 cash and not less than ⅛ royalty.

Texas Mid-Continent sets convention dates

The forty-fifth anniversary of the discovery of commercial oil production in Texas will be the theme for the annual meeting of the Texas Mid-Continent Oil & Gas Association in Fort Worth October 31 to November 2.

The dates for the 1940 convention were chosen in keeping with the anniversary theme, said E. L. Smith, association president. The first commercial oil field in Texas was opened at Corsicana in October, 1895.

The 1939 convention of the association was held in Houston with nearly 1000 Texas oilmen in attendance.

Start slim-hole test in Buchanan County, Missouri

St. Joseph, Mo.—Long-quiet Northwest Missouri became active last week as The Carter Oil Company moved in a stratigraphic rotary rig for a slim-hole test in SW 2-55n-34w, Buchanan County, southeast of St. Joseph. It is the first venture of a major company for Missouri.

In Richardson County, Nebraska, the only area that has produced oil in the Forest City Basin, Pawnee Royalty Company's Boice 1, discovery at Falls City, was deepening to Ordovician lime, expected at about 3000 feet. Devonian was the first pay zone.

In Iowa, Oscar Gruber was drilling again in Fremont County, C SW SE 8-67n-40w. The test was begun as a water well, but has been carried below 1300 feet.

Two new locations have been announced for Northeast Missouri. T. E. Baldwin (Wichita Falls) et al staked location in SW 21-65n-14w, Schuyler County. Harris & Holmes, St. Louis, propose to drill in Knox County, NE NE 11-61n-11w.

Southwest Texas

Two new fields opened along lower Gulf Coast

Corpus Christi.—Two wildcats were placed on production to open as many lower Gulf Coast oil fields during the past week. Another test was in process of completion in a 6600-foot Frio sand and is showing for a commercial well. These operations, plus the expansion program at Wade City in Jim Wells County, place the lower Gulf Coastal trend back in the position of a major wildcatting area. A number of wildcats, however, were eliminated.

Colton & Colton's Mahon 1, I. R. R. Survey No. 27, and 2½ miles northeast of Telferner, flowed at the rate of 70 barrels of 21.5-gravity oil per day through 3/16-inch choke from Catahoula sand at 2693-98 feet. The 5½-inch casing had been set at 2696 feet with perforated liner and screen set at 2693½ feet. Flow was under pressures of 960 pounds on tubing and 1050 pounds on casing. This discovery is more than a mile south of the uncommercial gas production in the old Telferner gas field (sometimes referred to as the Beck salt dome). It was drilled by Weigand Brothers under contract and supported by Wilcox Oil & Gas Company. Offsets have been made two ways from the discovery for immediate operations.

In Refugio County, two set backs for the Fagan district resulted from as many abandonments. Barnsdall Oil Company et al's Fagan 2, ½ mile west of the Fagan field discovery well and only producer in the field, drilled to 6155 feet, plugged back and tested salt water in the upper sands and was abandoned. Several miles northwest of the field, H. J. Porter et al's R. H. Morrow 1, Perry Survey, was stopped at 7331 feet.

New Sand at McFaddin

Barnsdall Oil Company established a new Frio sand producing level in the McFaddin field of Victoria County with J. M. McFaddin B-2. The well had tested salt water and oil in the regular pay at 4407-23 feet, then deepened to 7247 feet. It was plugged back and perforated at 6350-57 feet, where it flowed 130 barrels of 37.9-gravity distillate per day through ⅛-inch choke under 750 pounds working pressure. Casing was sealed. The new sand was logged at 6350-70 feet.

In San Patricio County, Fred M. Wood's Hart 1 had definitely opened a new oil pool with the completion through perforations at 6901-09 and 6910-21 feet. The well flowed slightly in excess of 50 barrels of fluid per day through ½-inch choke on 2-inch tubing under 175 pounds working pressure. The flow was ¾ percent basic sediment and the rest was 36.1-gravity oil. The well is located about one mile northwest of Odem in the W. C. Burgess Survey.

Nearly three miles farther northeast and about the same distance southwest of Sinton, another wildcat was in process of completion in an attempt to open a new pool. It is Dan Auld and Texas Gulf Producing Company's San Antonio Loan & Trust Company 1, McAuley Survey, which had an oil and distillate sand at 6657-72 feet. The hole had been drilled to 7536 feet, but plugged back and was testing through perforations.

These two wells are in the midst of one of the most active wildcatting trends in the South Texas coastal area.

Wade City field of Jim Wells County was in the throes of an intensive program. Due to lapsing leases, farmout deals are being made on numerous tracts in the edge of the producing limits of the pool. These blocks call for wells to test the three known sands in the Frio and Vicksburg zone.

Live Oak County wildcat drills through Wilcox section

San Antonio.—Having progressed below 10,700 feet, Edwin M. Jones has drilled through the Wilcox section into the Midway formation in West 1-A, 2½ miles northwest of George West in Live Oak County. The well will be tested at above levels, casing intended to be set below 9600 feet.

The wildcat is considered to be the most important from a geological point of view ever drilled in the Wilcox trend due to the fact that it establishes the thickness of all zones to below that formation. Likewise, it is the first to find oil and gas shows deep in that formation.

In the meantime, tests were being conducted in two wildcat operations which are opening gas/distillate production in the Carrizo-Wilcox zone. They are the first producers in each sand.

Bee County's strike is Anderson-Prichard Oil Corporation and Mills Bennett Production Company's Robinson 2 at West Tuleta. The well was perforated at 7525-35 feet and was cleaning into pits after 5/16-inch choke was set on 2-inch tubing. It was showing 1750 pounds working pressure on tubing and 1450 pounds on casing. On a drill-stem test of several days duration, the well flowed gas and distillate, rated at 50 barrels per day, through ¼-inch choke on top and bottom.

Two Starr County wildcats testing favorable indications

McAllen, Texas.—Sun Oil Company was testing two Starr County wildcats which may be opening new oil fields for the Rio Grande Valley sector of the South Texas trend. The two wells are on the Kelsey-Sun trend and further expand an already important area.

Sun Oil Company's E. Rodroguez 1, several miles southwest of the Kelsey field and in the Santa Teresa grant, was plugged back from 7507 feet. Perforations had been made between 6434-39 feet and production test was under way. This sand apparently is in the Jackson zone.

The company was coring below 4900 feet in Lehr 1, Section 513, 8 miles southwest of the Sun field. The test had cored a sand at 4833-40 feet with oil and gas showing. Drill-stem test at 4831-40 feet recovered 215 feet of oil and gas-cut salt water and 600 feet of salt water without any pressure in 15 minutes. It previously had shown for a producer in shallower sands.

Texas Gulf Coast

Montgomery county wildcat sets casing at 9600 feet

Houston.—Most closely watched wildcat on the Texas Gulf Coast is David B. McDaniel's Baldwin 1, Tamina area, Walker County School Land Survey, Montgomery County. Drilled tight it is rumored the wildcat had an oil sand in the Wilcox formation. Hole is bottomed at 9741 feet and 7-inch casing was set at 9609 feet. Besides the good show in the Wilcox, it is reported other shows were logged up the hole.

In the Double Gum Bayou area, Liberty County, Titantic Oil Company, Hilary Hebert and Sidney Smith's Boyt 1 was waiting on cement after perforating casing at 8535-40 feet. Another test was planned for this week. The wildcat indicated it would produce oil when drilled to 8865 feet, where it attempted to blow out several times.

Southwest of the discovery at Chocolate Bayou, Brazoria County, Glenn H. McCarthy's Andrau 1, H. & T. B. 5, may become the deepest producer in Texas and may open a new sand for the Chocolate Bayou field. It is bottomed around 11,392 feet, with casing reported set around 11,353 feet. A gas was logged below 11,000 feet, and sands at 11,376-413 feet and at 11,459-468 feet were shown on an electric log. The same operator's Houston Farms Development Company 2 was down to 11,760 feet, deepest well ever drilled on the Texas Gulf Coast. Operators set 5½-inch casing at 11,170 feet for a test.

Anchor Outpost Completed

About 2500 feet southeast of the discovery at Anchor, Brazoria County, Humble Oil & Refining Company completed R. A. Carr 1 after perforating casing with 20 shots at 10,479-491 feet. It came in flowing 138 barrels of 41-gravity oil daily through ¼-inch choke with tubing pressure of 2400 pounds and casing pressure of 2550 pounds. The same operator's Crocett 1, southeast side of Anchor, was pulling tubing to squeeze perforations at 9605-15 feet after a test showed salt water.

Two miles southwest of the discovery at Anchor, Glenn H. McCarthy's Neidringhaus 1, J. Bradley Survey, was running electric log at 10,844 feet after drilling to 10,975 feet in shale. No shows have been reported in this outpost. The operator's Yocum 1 was coring at 9979 feet in sand with an odor of gas, topped at 9945 feet.

On the East Bernard prospect in Wharton County, Cockburn et al's Leveridge 1, J. Scott Survey, was coring in shale at 8100 feet. This wildcat attracted considerable attention when a

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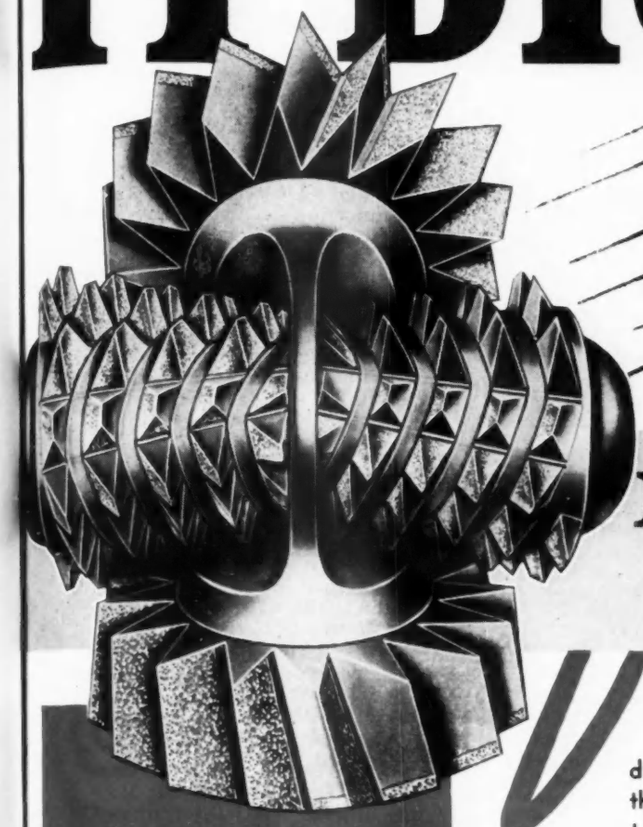

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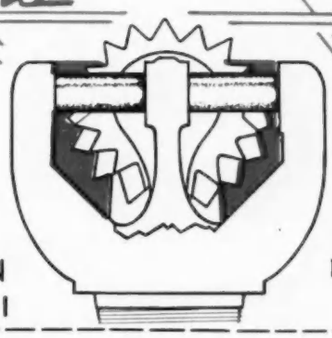

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sand with a slight odor of oil was cored at 7950-52 feet.

At Lissie, Wharton County, Strake Petroleum Corporation's Poole 1 was setting cement plug at 9000 feet at the end of the week after making a test down the hole. Casing was perforated at 9860-90 feet, and the test showed salt water when swabbed. It previously showed oil and salt water in the Wilcox formation.

Ft. Bend Wildcat Staked

In the Needville area, Ft. Bend County, W. L. Goldston has located Hackstedt 1, wildcat in the H. & T. C. Survey No. 47.

In the Alvin area, Brazoria County, Rowan & Broun's McIlvaine 1, A. C. H. & B. Survey, was abandoned at 7515 feet in shale. The wildcat logged salt water sands in the lower horizons.

Glenn H. McCarthy indicated a deep test for Munson 1, Bailey's Prairie prospect, S. Carter League, Brazoria County. Hole was bottomed in shale at 6634 feet, and 9⅝-inch casing was set at 6628 feet.

Humble Oil & Refining Company made a 16-minute drill-stem test of a new sand at 5600-87 feet at Danbury field, Brazoria County in Bassett Blakley 2 and recovered 430 feet of mud and 1600 feet of salt water.

East of Humble, Harris County, Rod Montgomery et al's Bender Estates 1, J. W. Singleton Survey, was abandoned at 8000 feet after making a drill-stem test around 7800 feet which showed salt water. The wildcat had a slight show of oil.

On the flank of Sugarland field, Ft. Bend County, Sam F. Bashara's Sugarland Industries 1, W. Stafford Survey, was coring in shale at 7400 feet after coring salt water sands at 6771-76 and 7074-79 feet.

Ask higher allowable for Eagle Hill, Duval County

Operators in the Eagle Hill field, Duval County, requested a daily allowable of 17 barrels per well at a hearing before the Texas Railroad Commission last week. They declared other fields in the area were getting from 15 to 20 barrels per well, while the 52 wells in the Eagle Hill field were assigned 10 barrels each.

F. V. L. Patten, director of production for the commission, pointed out that the depths of the fields vary in this area, and that the allowables assigned are based on the marginal well statute.

Testimony showed that many wells are making large amounts of water, as high as 95 percent in some instances. Potentials range upward from 42 barrels.

Al Buchanan, San Antonio operator, told the commission that Magnolia Petroleum Company and Humble Oil & Refining Company will buy the oil, which is Mirando grade.

Ask 10-acre spacing for Victoria County field

Operators in the Victoria field, Victoria County, requested 10-acre spacing at a hearing before the Texas Railroad Commission last week. There are 6 wells in the field.

Proration on acreage and per well, with 75 percent allocated on the former factor and 25 percent on the latter, was requested. The operators also asked for authority to set only 300 feet of surface casing, although there are fresh water sands in the area down to 1700 feet and wells are located within a mile or two of the city of Victoria.

West Ranch-Vanderbilt area termed West Ranch field

The West Ranch-Vanderbilt sector of Jackson County, Texas, is to be known as the West Ranch field, according to J. M. Hancock, chairman of the oil field nomenclature committee of the South Texas Geological Society.

The Vanderbilt field was opened several years ago, and later was followed by, then merged with the West Ranch pool.

Issue order to facilitate salt water disposal in East Texas

East Texas operators will be permitted to assign to other wells on the same lease oil now produced from a well on the tract if they choose to use this well for salt water injection, under an order issued by the Texas Commission.

Applicants for such permits will be required to make a potential test of the proposed injection well to determine whether it can make the allowable.

As soon as work begins on the injection well, the other wells will be allowed to produce the additional oil. Actual injection of salt water through the well must start within 90 days. If injection has not begun within that period, the additional allowable will be withdrawn from the other wells and the extra oil produced will be charged back against the lease.

Louisiana Gulf Coast

Salt water breaks in at Erath; prepare new test

Lake Charles.—The Texas company was preparing to make another test on its potential discovery test at Erath in Vermilion Parish. Vermilion Parish School Board 1 was perforated at 11,378-388 feet, and came in making gas and distillate. Latest gauge was 121 barrels of distillate. Salt water broke in, and the wildcat started making 16 percent salt water. Operators will shut off the bottom section of the sand for another production test.

In the Stella area, Plaquemines Parish, The California Company's Delta Minerals 1, Section 2-15s-24e, was running 7-inch casing to 10,189 feet. Hole is bottomed at 10,254 feet. There have been rumors that this wildcat has logged oil sands and it attempted to blow out.

Continental Oil Company was still testing Niblett 1 at Niblett Farms, Jefferson Davis Parish, which came in to open a new oil field when perforated at 11,624 feet. Last week it was flowing 97 barrels of fluid daily, 8 percent basic sediment and water, through ¼-inch choke. Tubing pressure was 2400 pounds.

Glassell & Glassell were completing another well in the new sand at Anse La Butte, St. Martin Parish. Moresi 1, Section 121-9s-5e, perforated with 164 shots at 4675-4715 feet, was flowing washwater and oil into the burning pits through 10/64-inch choke. Tubing pressure was 760 pounds and casing pressure 300 pounds.

Testing at West Lake Verrett

At West Lake Verrett, St. Martin Parish, Shell Oil Company was preparing to make another test on Jeanerette Lumber Company 4 in a new sand. Last week the well was tested at 11,343 feet and it flowed oil and salt water. Perforations were squeezed. Cement has been drilled out to 11,337 feet for another test.

The Texas Company has made location for its second well on the side of Port Barre field, St. Landry Parish. Botney Bay 28 is 450 feet southeast of Botney Bay 27, Section 4-6s-6e, which opened a new sand.

The California Company was preparing to complete two new wells in Barataria field, Jefferson Parish. Danciger-State 1 cored oil sands at 8179-98 feet and at 8210-18 feet. A drill-stem test was made. Zerinque-Community 1 made a drill-stem test at 8271-79 feet that showed oil and salt water.

Amerada Petroleum Corporation has completed its first Wilcox oil producer at Ville Platte, Evangeline Parish. Roberts 1 was drilled to 10,190 feet in salt water sand, and 5½-inch casing set at 10,189 feet. Casing was perforated with 68 shots at 10,114-131 feet and with 88 shots at 10,138-160 feet. It came in flowing 633 barrels of 46-gravity oil daily through ¼-inch choke with tubing pressure of 1740 pounds.

At Chalkley, Cameron Parish, Shell Oil Company logged several new deep sands in Coastal Club 1, Section 27-12s-6w. Hole was bottomed at 9400 feet in shale, and side wall cores were being taken. An electric log showed possible oil sands at 9355-59 feet, 9360-66 feet and at 9373-76 feet.

Extend Grand Lake Field

Grand Lake field, Cameron Parish, was extended approximately 1000 feet south and west last week when Superior Oil Company completed State 9 after perforating casing at 8380-8406 feet. The well made 188 barrels of 33-gravity oil daily through 10/64-inch choke with tubing pressure of 2400 pounds.

Vincent & Welsh's Ruppert 1, east of Tepetate in the Richie area, Acadia Parish, was abandoned after drilling to 9007 feet. It had attracted attention as it had indicated a new oil field. A test at 3505-15 feet showed mud and sand cut with 24-gravity oil. The sand was recorded and it failed to indicate commercial oil.

Magnolia Petroleum Company completed its first well at Eola, Avoyelles Parish. Foster 1 was drilled to 8570 feet in shale and perforated with 163 shots at 8528-56 feet. It flowed 240 barrels of pipe-line oil in 9 hours through 12/64-inch choke. Six other wells at Eola are down to the producing sand and will probably be completed the coming week as oil producers.

Sun Oil Company has made location for its second wildcat on the flank of

Fausse Point, Iberia Parish. Planters Lumber Company 2 is in Section 27-11s-8e. The operator's first well was abandoned around 5000 feet in salt.

West ½ mile of the discovery at LaPlace, St. James Parish, Pan American Production Company's Godchaux 1, Section 97-11s-7e, was setting 7-inch casing below 8900 feet for tests. The discovery was completed as a gas and distillate producer from Miocene sands at 8115-22 feet.

On the flank of Bay Junop salt dome in Terrebonne Parish, Stanolind Oil & Gas Company has located State 1, wildcat 2337 feet south and 388 feet east of the northwest corner of Section 35-21s-14e. The company recently leased several hundred acres in this area from Louisiana Land & Exploration Company.

Arkansas

Smackover lime prospect has only slight oil show

El Dorado, Ark.—Another Smackover lime wildcat prospect in South Arkansas looked unfavorable last week, although it showed some oil in cores and may be deepened from present depth of 4484 feet, where it is shut down. It is British-American Oil Company's Freeman-Smith 1, C SE NE 17-15-13, Calhoun County.

With elevation of 117 feet, this test topped Nacatoch at 2235 feet, logged Meekin sand at 2581 feet, Graves sand at 2645 feet, Travis Peak at 3110 feet, Buckner at 4361 feet and Smackover lime at 4430 feet. In a core at 4440-43 feet, one foot of chalky oolitic lime with little porosity but a slight stain of brown oil was recovered, and at 4445-48 feet a 6-inch recovery was made of oolitic chalky lime with pin points of oil. On a drill-stem test at 4425-48 feet with ⅜-inch choke at top and ¼-inch at bottom, with tool open 13 minutes, it showed 150 feet of water and mud. Hole was then reamed to 4451 feet and cores were taken from that depth to 4474 feet with no recovery. At 4476-81 feet, 4½ feet of recovery was made of soft porous sand with a slight show of oil and a salty taste, and after making 3 feet more, the test was shut down.

Standard Oil Company of Louisiana's W. P. Sturgis 1, NW SE 1-17-27, Miller County Smackover lime wildcat test, drilled hard sand at 7114 feet last week.

Edward C. Harvey, of Tulsa, located a wildcat in NE SE 30-2n-25w, Yell County.

Only three completions were recorded in Arkansas, all oil wells in the Magnolia field, Columbia County.

Louisiana permits

Thirty-nine drilling permits were authorized last week by the Louisiana Conservation Commission, of which 7 were in North Louisiana divided between two parishes, Bossier, 1, and Caddo, 6. Permits in South Louisiana were in the following parishes: Acadia, 5; Avoyelles, 3; Calcasieu, 2; Cameron, 1; East Baton Rouge, 1; Evangeline, 3; Iberville, 1; LaFourche, 6; Plaquemines, 3; Rapides, 1; St. Landry, 1; St. Mary, 4, and Terrebonne, 1.

North Louisiana

New Olla field has five active locations

Shreveport.—The newly discovered Olla field, LaSalle Parish, 5 miles east of the shallow Urania field, found productive in the Wilcox at 2269-76 feet in H. L. Hunt's Louisiana Central Lumber Company 9, NE NE 13-10n-2e, had one operation at the testing stage, another repairing derrick at depth near the producing horizon; another rigged and two work-over operations testing.

H. L. Hunt's Louisiana Central Lumber Company 10, NW SW 7-10n-3w, was setting casing at 2650 feet, expecting to test the Wilcox between 2200 and 2650 feet. The same operator's Louisiana Central Lumber Company 11, SE NE 13-10n-2e, was installing new derrick after the first collapsed after 2200 feet of hole was made. E. F. Neely, of Shreveport, rigged at Lizenby 1, NW NE NE 19-10n-3e.

Eight miles northeast of the Olla discovery, Arkansas Fuel Oil Company's Louisiana Central Lumber Company 1, NW SW 31-12n-3e, Caldwell Parish, perforated casing at 3540-45 feet with 20 shots and recovered 52 joints of water in a 20-minute drill-stem test. It will plug back to test the Wilcox. East ½ mile of the discovery at Olla, H. L. Hunt and Arkansas Fuel Oil Company's Goodpine 1, NW NW 18-10n-3e, drilled out cement retainer after squeezing off perforations at 2399-2402 feet.

Along this same "trend" but to the southwest near the Angelina-Caldwell flexure, J. R. Apperson et al spudded a wildcat test, Reed 1, SW SW 10-7n-3w. Another North Louisiana wildcat location was Foster-Smith et al's McRae 1, NW SW 5-12n-16w, DeSoto Parish. Several months ago Samuel S. Alexander's Stell 1, NE NE 5-12n-16w, showed considerable oil in both the Paluxy and Glen Rose horizons.

Gulf Refining Company abandoned Sondheimer 1, SE NW 33-18n-12e, Madison Parish wildcat, at 5545 feet in sandy shale. Elevation was 93.4 feet.

Tiki Exploration Company's Moss 1, NE SE 11-22n-8w, Glen Rose lime wildcat south of Haynesville, Claiborne Parish, drilled broken lime at 4787 feet. With elevation of 333 feet, this test topped First Anhydrite at 4284 feet and Massive Anhydrite at 4490 feet.

On the southwest edge of the shallow Converse field, Sabine Parish, and producing from a new horizon, Noyes B. Livingston's Bowman-Hicks 1, SW SW 36-9n-14w, was completed at 3535 feet, making 25 barrels of oil daily and 30 barrels of salt water. It is producing from the Paluxy horizon. Converse production heretofore has been from the Saratoga and Annona chalk and from the Wolfe City sand.

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California

Aliso Canyon proving important gas reserve

What promises to be an important contribution to California's reserves of natural gas has been made by Tide Water Associated Oil Company with discovery of a prolific gas field underlying a shallower black oil producing zone in the Aliso Canyon field, Los Angeles County. It is the first gas field of importance to be discovered in Southern California, the state's other gas producing areas all being located in the San Joaquin Valley.

The Aliso Canyon field is within a few miles of Pico Canyon, location of the first oil well drilled in California in the 1860's. It is in the broken foothills along the southern flank of the rough Santa Susana mountains, and until the company opened roads, the area was almost inaccessible.

The Aliso Canyon oil field was discovered by Tide Water Associated Oil Company in October, 1938, with completion of its Porter No. 1 well at 5000 feet for 2400 barrels daily of low-gravity oil. To date, five wells have been completed at this depth with potentials ranging from 1000 to 2400 barrels daily, 21- to 26-gravity oil.

Location of the structure was made from surface geological data; a water course across the top of the structure left the formation clearly exposed.

The gas-zone discovery was made in Porter 12, a deep project. The producing oil zone is in the Pliocene, and the gas zone was encountered in the middle Miocene. Hole was taken to 8202 feet, and then plugged back to 7551 feet. Liner was perforated at 6908-7548 feet, and 2½-inch tubing landed at 6555 feet.

During 24-hour production test on completion, it flowed 262 barrels of fluid, 201 barrels net oil; 53.4-gravity; average cut 23.4 percent (16.7 water, 5.7 emulsion, 1.0 mud) through 32/64-inch bean; 1875 pounds tubing pressure; 2320 pounds casing pressure, and 12,628,000 cubic feet of gas. On its second day, well flowed at the rate of 240 barrels daily net oil and approximately the same amount of gas and was shut in. Shut-in pressure registered in excess of 3000 pounds.

The company holds 233 acres in fee and about 1650 acres under lease in the immediate vicinity. Other holdings in the area are by Standard Oil Company of California, Union Oil Company of California and Shell Oil Company. A fault line cuts across the northern edge of Tide Water Associated Oil Company's property which appears to limit the productive area of its holdings. Offset wells drilled by other companies failed to develop production and were bottomed in the fault zone.

Coalinga shallow area well makes surprise flow

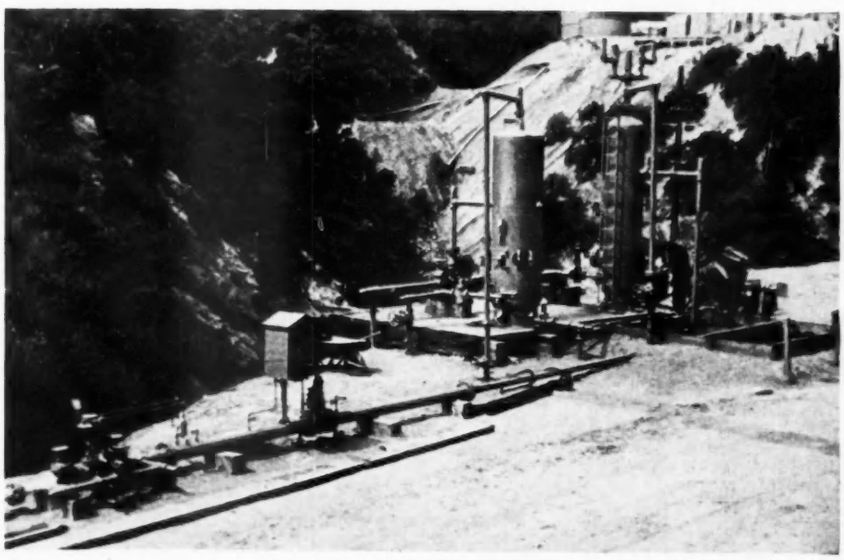
Los Angeles.—The old shallow area of the Coalinga field, Fresno County, where nothing of importance has happened for the past 15 years, practically stole the play from the new East Coalinga deep pools last week. Tide Water Associated Oil Company completed Guardian 22 on Government property, flowing 1440 barrels of 32.2-gravity oil, cutting 2.4 percent, together with 250,000 cubic feet of gas. Hole was bottomed at 3612 feet with 7-inch cemented at 3260 feet and 367 feet of 5-inch liner landed at 3607 feet. Production is from the Etchegoin-Temblor zones. It generally is regarded as a freak producer and no explanation has as yet been advanced for its performance.

Superior Oil Company has added an-

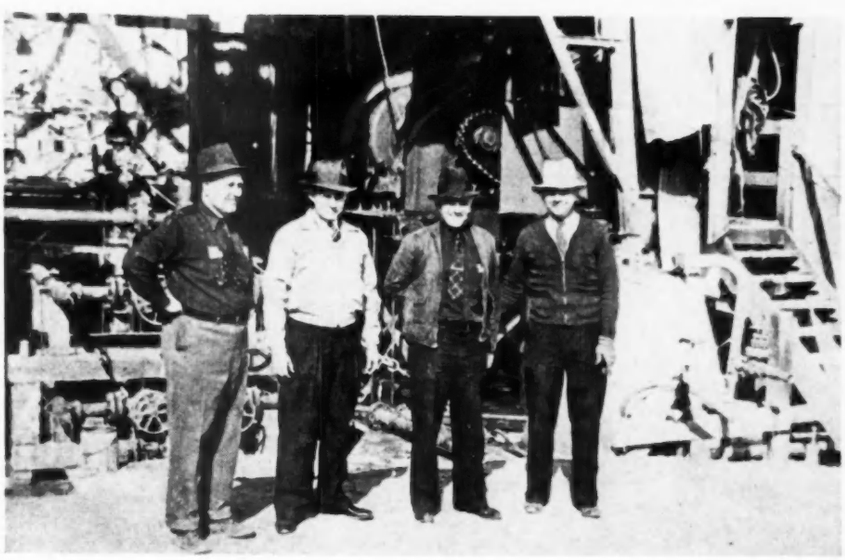
California's Newest Natural Gas Reserve

Tide Water Associated Oil Company's Porter wells Nos. 1, 11, 12 and 13, and Fernando 11, seen from lower main road

Porter 12, looking northeast, south of Porter 13 . . . Note frost on line at right



Set-up for handling gas from Tide Water Associated Oil Company's Porter 12



R. W. Ruberts, Drilling Foreman; R. S. Curl, Superintendent; G. C. Fosnaugh, Production Foreman, and F. C. Foster, Assistant Superintendent at Porter 12

other good producer at Rio Bravo—Smith 3, Section 34-28-25. Bottomed at 11,490 feet in oil sand and shale, it flowed 1530 barrels daily of 38.4-gravity oil through a ½-inch bean. The company's Fink 3 in this field, Section 27-28-25, is drilling in shale at 11,110 feet. On this same section, Weber 2, using the largest drilling outfit ever assembled on a rotary rig, is drilling shale at 9755 feet. This well was spudded March 22 and has been averaging about 542 feet of hole per day.

In the Wasco field, Continental Oil Company has bottomed another project at 13,138 feet—Meyer 1, Section 7-27-24. Top of the Rio Bravo was encountered at 13,086 feet.

Final allocation of drilling contracts covering development of the Huntington Beach off-shore oil pool was made by the State of California last week when Surf Associates and Termo Company of Long Beach were awarded contracts covering the area lying between Eleventh and Twenty-third streets along Ocean Avenue.

Plan federal court test of California off-shore case

United States Department of Justice officials last week were reported to be readying a suit to test legality of the federal government's claim to the California off-shore oil fields, but were said not yet to have decided how the case was to be brought into the courts.

The department's action was reportedly based upon approval given by the White House to plans to circumvent the pigeon-holing in Congress of legislation instructing the Attorney General to assert the government's title to the lands. Hearings on both the Nye and Hobbs resolutions to that end were held last year by the Senate Public Lands and House Judiciary Committees, but no action was ever taken.

Officials of the department refused to discuss the matter other than to say it was being studied, but it is understood consideration was being given to the best of three ways said to be available to get the question before the courts. It was said that this could be done either by raising the question in a public lands suit now pending in a federal court in the District of Columbia, by filing an original suit in the United States Supreme Court or by bringing a case in some California court.

It is understood that the matter was taken to the White House some time ago and that the word was given to go ahead with the framing of a case, with the idea that should it fail the department again could go to Congress for legislation.

The department is said to be anxious that the suit be initiated before June 30, the end of the fiscal year. This, it is explained, is because of the fact that the House Appropriations Committee, in passing on the department's supply bill for the coming fiscal year, refused to approve the department's adventure in the California off-shore fields and, while it refused to adopt a motion by one member to prohibit the expenditure of any funds along that line, did incorporate in its report to the House a suggestion that the matter be abandoned.

"After listening to the testimony of a representative of the Attorney Gen-

eral's office relative to work being pursued by that office in regard to title of submerged lands within the boundaries of the states," the committee said in its report, "the committee recommends against the expenditure of federal funds in litigation based upon doubtful or at best theoretical construction of law."

In the face of that report, it is suggested, the department would be reluctant to bring a suit after July 1 and then have to appear before the committee next year to explain why it had flouted its suggestion. However, the funds available for the current year have no such string attached and, it is represented, if the department files the suit before June 30, it will be safeguarded against criticism that it had not complied with the wishes of Congress.

Michigan

Tallmadge-Walker outpost may speed Traverse lime play

Mt. Pleasant.—Mesel & Spielbergs' Lipski 1, SW NE SW 14-7n-13w, Tallmadge Township, Ottawa County, completed for a 50-barrel Traverse lime well at 1859 feet, is ¾ mile northwest of previously developed wells in the same horizon and looms as a likely forerunner to more development off the northwest flank of Tallmadge-Walker field.

C. L. Maguire, Inc., who a week ago announced intentions to junk Clark 1, Section 32-16n-2w, Midland County, after failure to recover a bit and stem at 4663 feet, has been placed back on the active list. A 5-inch casing string originally had been cemented at 3740 feet, but the pipe pulled completely free when salvage operations were started. Hole will be reamed from 3740 feet to top of the lost tools, and at that point will whip-stock for new hole. Operators hope to carry hole about 500 feet deeper for a test of the Sylvania sand. The Sylvania has not been tested to any extent in the state, but has shown oil saturation on one test drilled in Midland County.

First deep rotary job for Western Michigan will get underway this month when Twin Drilling Company will drill a 2500-foot wildcat in Fruitport Township, Muskegon County. Rotary has been used extensively the past year to drill 1900-foot holes in the Walker field, Kent County. The projected Muskegon wildcat will carry through the Traverse into the Dundee, and possibly the Monroe beds. The company recently set a drilling record in Wexford County, on Kirkham's Whaley 1 wildcat, Section 24-21n-9w, when 910 feet of glacial drift was drilled out in 18 hours.

Fleming & Fox continued to test Lechlentner 1, Section 27-2n-9w, Hope Township, Barry County, a semi-wildcat, after plugging back from 1844 to 1825 feet. Test swabbed from 10 to 30 barrels a day from the Traverse.

Ask 20-acre spacing for Michigan's South Wise pool

A hearing on an application for 20-acre diagonal spacing in the South Wise pool, Isabella County, was held by the Michigan Oil Advisory Board and Supervisor of Wells P. J. Hoffmaster last week. The application was filed by Cities Service Oil Company, Turner Petroleum Corporation and Cryden Petroleum Corporation.

If granted, the order will be the first for 20-acre spacing and the second to deviate from the 10-acre plan normally followed in the state. The board previously granted 5-acre spacing for the Monroe County Trenton lime field, and has recognized 20-acre spacing in the Redding field, Clare County, by doubling the allowable granted wells on 10-acre tracts. No order was issued making the 20-acre locations in Redding mandatory, however.

Mississippi

States second strike flows 800 barrels oil; completed

Jackson, Miss.—The discovery well for Mississippi's second oil field, Kingwood Oil Company et al's Mrs. R. E. Wilburn 1, NE NE 31-12n-3e, Yazoo County, was completed last week at 4885 feet in the Eutaw (Blossom) sand flowing 1000 barrels of fluid daily through 2-inch open tubing of which 182 barrels daily was salt water and the rest oil. At an elevation of 257 feet, it topped Eutaw at 4670 feet and the oil sand at 4876 feet, at which point 7-inch casing was cemented. The well began to flow after swab was run 10 times.

In the same locality, Oliver, Rowan, Hope & Wright made locations for four new tests, all on the Harper lease, in Section 29-12n-3e, Harper 1 being in C SW SW NW; Harper 2 in C SE SW NW, Harper 3 in C NE SW NW, and Harper 4 in C NW SW NW.

Five wildcat locations were made: Exchange Oil Company's Russell 1, NE SE 32-15n-2e, Holmes County; L. B. Allen's Reid Clark 1, SW SW 4-13n-4w, Humphreys County; Ralph A. Johnston's Minerva Young 1, C SE NE 32-11n-4e, and F. H. Ray 1, C SE SW 6-8n-3e, both in Madison County, and Sells Petroleum Company's Unknown 1, SW SE 34-9n-4w, Yazoo County.

Lionel Hawkins secured a 6500-acre wildcat block in Township 13n, Range 2e, Holmes County, from Ace Locke. G. W. Shiveley has secured a wildcat block in Township 7s, Range 4e, Union County, northeast Mississippi, just southeast of the town of New Albany and northeast of a block held several months by H. D. Easton and associates of Shreveport.

Florida Discovery Oil Company was preparing to deepen Sholtz 2, SW SW NE 9-15n-10e, Levy County, Florida, from 5266 feet.

W. G. Burrage and C. J. Davidson, both of Mobile, Alabama, are leasing in Townships 3, 4, 5 and 6 south, Ranges 2, 3 and 4 west, Mobile County, Alabama.

New Mexico

Eunice edge well finds irregular water table

Hobbs.—Continental Oil Company's State 6-E-17, C W½ SW SW 17-22s-36e, encountered an irregular water table in completing a natural flowing well on the southwest edge of the Eunice field. It was credited with a potential of 168 barrels of 31-gravity oil and 48 barrels of water through ¾-inch choke from pay at 3830-40 feet with an elevation of 3597 feet. Two outpost tests were assigned the prolific lime pool between the Eunice and Penrose fields. Humble Oil & Refining Company's State 1-M, C NW SE 18-22s-37e, and Cities Service Oil Company's State 2-M, C NW SW 36-21s-36e, are seeking southeast and northwest extensions, respectively.

Barefield-Phipps Oil Corporation's Walker 2, C SW NW 5-18s-32e, is a new project for the south portion of the Maljamar field.

In the Loco Hills field, Eddy County, Martin Yates and Continental Oil Company's Brainard 3, NW SW NW 11-18s-29e, failed to exclude water and completed with a potential of 302 barrels of 37-gravity oil and 38 barrels of water through 38/64-inch choke after nitro shot at 2658 feet. Brainard 4, situated 1980 feet due east, flowed 10 barrels hourly natural at 2651 feet, and halted at 2661 feet for nitro shot. Jones & Yates' Robinson-Republic 1-B, SE SW SW 35-17s-29e, missed the regular Loco Hills oil pay, but a lower lime at 2698-2713 feet yields 8 barrels of oil daily. Hole is bottomed at 2810 feet, and is due to be given a nitro shot. Archer and Jones' Massie 1, NW NW NE 20-18s-29e, is awaiting orders with 2200 feet of water in hole at 3235-50 feet.

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UNITED STATES WELL COMPLETIONS

Arkansas

Company, Well and Location	Init. Prod. Bbls.	Depth
Columbia County (Magnolia)—		
Mid-Continent Pet. Co. et al, Foster Unit 1, 24-17-20	550	7595
Normandie Oil Corp., Booth 1, 25-17-20	550	7620
Shell, Foster 2, 24-17-20	630	7647

California

Company, Well and Location	Init. Prod. Bbls.	Depth
Fresno County (Coalinga shallow)—		
Tide Water, Guardian 22	1400	3612
Fresno County (E. Coalinga Eocene)—		
Robert S. Lytle, Operator 86-12C	2255	6892
Superior, Cagle B-2	1307	8168
Kern County (Canal)—		
Ohio, KCL E-18	890	8245
Kern County (Coles Levee)—		
Richfield Oil Corp., KCL B72-33	No. Est.	9480
Kern County (Kern River)—		
Dick & Dore Oil Co., No. 24	5	649
No. 28	5	606
Helm & Smith, H&S 19	5	485
Kern County (Midway-Sunset)—		
Texas Co., No. 39	280	3195
Kern County (Mountain View)—		
Hogan Pet. Co., Foster 1	198	5971
Shell, Bahrenburg 3	384	5996
Kings County (Kettleman North Dome)—		
Standard 72-17Q	869	8690
83-27Q	1779	8308
Los Angeles County (Aliso Canyon)—		
Tide Water, Porter 12	201	8202
Los Angeles County (Dominguez)—		
R. E. Havenstrite, Larronde 2	675	7587
Shell, Reyes 57	514	5408
Los Angeles County (Wilmington)—		
General Pet. Corp., Blinn 7	120	3300
Hancock Oil Co., Harbor A-15	549	4063
Long Beach Oil Dev. Co. W-10-X	337	4094
Padreson Oil Co., A-1	150	3431
Royalty Service Corp., Guinn 16-61	480	3622
Union Pacific R.R., No. 41	114	3436
Orange County (East Coyote)—		
Union Oil Co. Hole 22	94	5388
Orange County (Richfield)—		
Great Northern Oil Co., Oak 1	125	3448
Santa Barbara County (Santa Maria Valley)—		
Union Oil Co., LeRoy 4	710	5482
Ventura County (Shiells Canyon)—		
Santa Clara Pet. Co., Calumet 15	336	3224
Ventura County (San Miguelito-Padre Canyon)—		
Continental, Grubb 15	674	6525
Ventura County (Ventura Avenue)—		
British-American Oil Prod. Co., Hartman 8	744	8772

Illinois

Company, Well and Location	Init. Prod. Bbls.	Depth
Christian County—		
A. Moore et al, Meyers 1, se sw se 7-13n-1e	*	1330
Clark County—		
Benson & Martin, Briscoe 1, se se ne sw 29-11n-14w	¶.10	326
Clay County—		
Pure, Travis 1, c e½ se nw 32-3n-8e	*	2984
Clinton County—		
J. D. Etheridge, Siegler 1, ne ne ne se 12-1n-1w	1200	2929
A. B. Potter, Lande 1, se ne ne se 12-1n-1w	675	2933
Scott-Carey Oil, Abernathy 1, nw se ne se 12-1n-1w	1296	2917
Adams 1, blk 1, lot 1 12-1n-1w	439	2930
Louis C. Simmel, Kaelin Est. 1, sw se sw se 12-1n-1w	235	2928
Egyptian Ref. Co., Kavanaugh 1, se sw ne ne 13-1n-1w	549	2914
H. Randle, Wilson 1, lot 13, blk 1 13-1n-1w	320	2924
Tom Palmer, Knipping 1, se nw ne se 13-1n-1w	264	2912
Max Pray, Storer 2, sw ne ne ne 13-1n-1w	573	2913
O. W. Burroughs, Knolhoff 1, s½ s½ 2-1n-2w	100	1327
Klein 1, se se se 35-2n-2w	*	1380
Fayette County—		
Irl Rhynes, Koberlein 3, sw ne se 5-7n-3e	112	1576
Texas, Neathery 3, ne nw nw 6-6n-3e	147	1569
Yakel 5, s½ se sw 6-6n-3e	148	1579
Carter, McClain 8, ne sw nw 4-7n-3e	338	1562
McClain 10, sw ne nw 4-7n-3e	450	1569
Papoose Oil Co., Owens 5, sw c nw 8-7n-3e	115	1576
Carter, Miller 2, nw se nw 17-7n-3e	132	1590
McCormick 10, se nw ne 18-7n-3e	390	1574
McCormick 11, ne se ne 18-7n-3e	174	1525
Shell, Jedamski 8, sw nw se 21-7n-3e	74	1580
Texas, Wooten 8, se se se 31-7n-3e	147	1594
Carter, Huffman 2, se sw sw 1-8n-3e	31	1535
Huffman 3, nw ne nw 12-8n-3e	72	1496
Taylor 3, se ne sw 12-8n-3e	120	1532
Ping 1, se sw ne 16-8n-3e	198	1604
Larimore 2, se nw nw 21-8n-3e	222	1592
Dragoo 1, sw se ne 23-8n-3e	828	1537
Lawrence County—		
J. W. Cannon, Zaner 1, nw ne se sw 10-4n-11w	*	1701
Marion County—		
Eason Oil, Neirman 2, sw c nw sw 18-1n-1e	425	2917
T. T. Eason & Co., Schneider 3, lot 9, blk 42 18-1n-1e	417	2899
Menhall et al, I. C. RR 10, ne c blk 75 18-1n-1e	408	2909
Texas, Johnson 20, sw se nw sw 4-1n-2e	119	1842
Reid 6, 25 ft n of sw ne nw 5-1n-2e	336	2000
Murray 3, 120 ft w of ne se sw 7-1n-2e	685	2096
City of Centralia 46, nw ne nw nw 9-1n-2e	721	2094
William 8, se ne nw nw 9-1n-2e	66	2078
Tide Water, Miller 5, ne ne ne 18-1n-2e	600	2082
Magnolia, J. H. Young 94, nw ne se se 20-2n-2e	112	3445
Tomerlin, Young Hrs. 5, sw ne ne se 20-2n-2e	120	3446
Magnolia, Young 97, sw nw sw sw 21-2n-2e	772	3462
Young 35, ne nw nw sw 21-2n-2e	934	3495
Texas, Young 22, ne sw sw nw 21-2n-2e	786	3465
Magnolia, Shanafelt 39, se se sw 29-2n-2e	1014	3368
Shanafelt 40, sw c se 29-2n-2e	367	3425
Texas, Wayman 21, nw ne ne 31-2n-2e	100	1989
McCollum 26, ne ne nw ne 32-2n-2e	1957	3415
Lazaretti 5, c n½ sw sw 33-2n-2e	315	2070
Sands 8, ne nw nw sw 33-2n-2e	5600	3484
Shereskevech 8, nw nw sw nw 33-2n-2e	2114	3491
Wiser Oil Co., Weems 13, se nw nw nw 33-2n-2e	2550	3476
Richland County—		
Pure, Campbell 2, c w½ se se 1-4n-9e	7	2940
Wasson 1, c ne ne ne 27-4n-9e	34	2609
Dyson & Anderson, Ash 1, nw c sw 18-4n-10e	58	2932
Wabash County—		
Continental, Schultz 5, se se ne se 8-2s-13w	8	2438
Cowling 3, nw ne sw 17-2s-13w	169	2471
Elliott 1, sw nw ne sw 29-2s-13w	24	2479
Tide Water, Elkins 5, nw c sw 29-2s-13w	75	1732

[*Continued on next page*]

Summary of Drilling Operations in the United States, Week Ended April 13, 1940

	WELLS COMPLETED							*PERMITS FOR NEW WELLS				
	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total 1940	Total this Date 1939	This Week	Total this Month	Total 1940	Total this Date 1939	Year Total 1939
Alabama	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
Arizona	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Arkansas	3	3	.....	.....	1,730	56	63	.....	3	35	54	223
California	28	28	.....	.....	15,200	371	309	25‡	43	301	306	1,174
Colorado	.....	.....	.....	.....	.....	3	7	.....	.....	.....	.....	.....
Florida	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Georgia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Illinois*	70	63	1	6	32,016	1,003	1,074	88	158	1,121	.....	893
Indiana	5	3	.....	2	213	113	35	.....	.....	.....	.....	.....
Kansas	54	45	1	8	68,652	456	339	67	107	534	359	1,583
Kentucky	3	.....	.....	3	.....	70	180	.....	.....	.....	.....	.....
Louisiana	38	27	1	10	6,704	449	280	20‡	58	417	323	1,444
Michigan	11	11	.....	.....	1,325	384	346	20	42	360	302	1,419
Mississippi	2	2	.....	.....	1,258	41	1	.....	.....	.....	.....	.....
Missouri	1	.....	.....	1	.....	5	.....	.....	.....	.....	.....	.....
Montana	.....	.....	.....	.....	.....	33	28	.....	.....	.....	.....	.....
Nebraska	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Mexico*	19	17	.....	2	2,644	225	180	13	25	217	.....	293
New York	22†	21†	1	.....	84	324†	144†	.....	.....	.....	.....	.....
North Dakota	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ohio	13	7	2	4	74	237	229	.....	.....	.....	.....	.....
Oklahoma	51	22	5	24	3,649	628	557	33	75	569	564	2,059
Pennsylvania	48†	45†	2	1	60	731†	348†	.....	.....	.....	.....	.....
South Dakota	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Tennessee	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....
Texas	196	135	4	57	75,071	3,026	2,874	452	794	3,535	3,133	10,269
Utah	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
West Virginia	12	3	8	1	13	174	147	.....	43	127	101	718
Wyoming	.....	.....	.....	.....	.....	42	47	.....	.....	.....	.....	.....
Total this week	575	432	25	119	209,592	8,423	7,189	698	1,328	7,243	5,142	20,075
Total last week	579	394	35	150	203,257	7,847	6,742	630	630	6,545	4,811	20,075
Total this year	8,423	6,136	498	1,799	3,223,577	.....	.....	.....	.....	.....	.....	.....

* This tabulation includes those states where weekly data are available; figures for Illinois date from October 15, 1939; New Mexico from August 1, 1939.
† Includes water-input wells. ‡ Estimated.

United States Well Completions—*Continued*

Company, Well and Location	Init. Prod. Bbls.	Depth
ILLINOIS—Continued		
Wayne County—		
Pure, Gill 1, c w½ sw nw 32-2n-8e	62	3144
Al Stengele, Withrow Consol 1, c s½ sw ne 34-1s-7e	199	3295
Nelson-Strawser, Vaughn 1, nw nw nw 1-3s-8e	•	3498
White County—		
J. W. Carter et al, Johnson 2, nw nw ne 25-6s-8e	548	2534
McBride, Johnson 1, se nw ne 25-6s-8e	459	2544
Shell, Austin 1, ne se nw nw 25-6s-8e	211	2507
Exchange-Ohio, Rudolph 5, ne ne ne 14-6s-9e	180	2283
Blackstock, Storms 6, nw se ne ne 23-6s-9e	110	2262
Williamson County—		
Joe Blalock et al, Hill 1, sw sw sw 4-9s-2e	•	1630
Indiana		
Daviess County—		
Hartman, White 4, sw c nw sw 22-2n-7w	•	375
Gibson County—		
Continental, Kleiderer 1, nw se nw 26-3s-14w	128	3001
Roberts Bros., Keck 4, sw ne nw 34-3s-14w	60	2812
Knox County—		
Midwest Dev., Brock 1, se se sw se 10-2s-9w	25	1389
Spencer County—		
W. W. Damron, Frank 1, se ne se 35-7s-7w	•	934
Kansas		
Barton County—		
Sinclair Prairie, Schmidt 2, ne swc nw 20-16-11w	•	3332
Phillips, Weber 1, swc nw 13-16-12w	3000	3335
Shell, Bitter "B" 7, cwl nw ne se 6-16-13w	1920	3351
Bitter "B" 8, sw ne sw se 6-16-13w	2472	3356
Phillips, Wondra 1, c w½ sw ne 15-17-12w	101	3054
Alpine, Petz 1, c e½ nw se 7-20-11w	2732	3343
Derby, State 4, sec sw 10-20-11w	268	3297
Butler County—		
Becker, Balzer 1, ne se sw 32-26-6e	•	2839
Rex et al, Towle 1, sec ne 20-26-7e	50	2750
Cowley County—		
W-K Royalty, Ferguson 6, nw se sw 21-30-8e	30	2174
Atlantic et al, Smith 1, sec nw 33-33-4e	•	3736
Meyers, Dunn 1, nwc 33-34-5e	•	3510
Ellis County—		
Darby, Jorgenson 8, c s½ se sw 7-11-17w	3000	3356
Cities Service, Colahan 10, sw ne nw 24-11-17w	3000	3403
Phillips, Hendrick 6, c s½ nw ne 13-11-18w	3000	3375
Republic Natural, Joy "B" 2, c s½ ne ne 14-12-18w	2949	3645
Ellsworth County—		
Aylward, Boye 1, c w½ nw sw 9-16-10w	3000	3369
Atlantic et al, Stoltenberg "E" 1, c n½ nw se 27-16-10w	3000	3276
Gulf, Mehl 1, c s½ se nw 18-17-9w	3000	3255
Schroeder 3, se sw nw sw 20-17-9w	2166	3230
Skelly, Moran 6, c n½ se se 31-17-10w	3000	3231
Yarnell et al, Geminhardt 5, c e½ se sw 31-17-10w	3000	3231
Skelly, Zink 4, sw se sw 32-17-10w (OTD 2991½)	3000	3200
Greenwood County—		
Landon, Johnson "B" 2, nw ne nw nw 22-24-12e	35	1625
McPherson County—		
Bennett et al, Wiles 1, cwl sw se ne 25-19-2w	253	2993
Central Petroleum et al, Swanson 2, c s½ nw nw 18-20-5w	1511	3360
Mid-Continent, Peterson 2, c e½ sw nw 29-20-5w	277	3386
Continental, Johnson 2, c n½ se ne 31-20-5w	260	3380
Johnson 3, c n½ ne ne 31-20-5w	3000	3370
Graber 9, ne swc nw 32-21-1w	431	3290
Rice County—		
Cities Service, Hathaway 2, c s½ ne sw 27-19-10w	•	3288
Gulf, Drake 3, c s½ se sw 31-20-7w	•	3348
Shell, Brothers "A" 2, swc nw 31-20-7w	141	3325
Brothers "A" 3, cel se sw nw 31-20-7w	794	3322
Carlock, Renolett 2, nwc se 36-20-8w	517	3324
Rooks County—		
Schermerhorn, Smith 1, c e½ ne nw 13-1-17w	64	3470
Russell County—		
Snowden et al, Booth 1, sw se sw 32-11-15w (OTD 2880)	135	3056
Aylward, Ginther 2, nw se nw 19-12-15w (OTD 3110)	•	3296
Coralena, Phinney 1, c s½ sw sw 19-14-13w	2242	2970
Stanolind, Bond "B" 1, c s½ sw se 23-14-13w	880	2925
Texon, Rogg 3, swc nw 35-14-13w	967	2860
Stanolind, Boxberger 4, c w½ sw sw 14-14-14w	777	3071
Hartman et al, Gurney "A" 3, c w½ nw nw 23-14-14w	1262	3159
Skelly, Kein 1, c w½ sw sw 25-14-14w	593	3139
Crown et al, Krug "B" 3, swc nw 26-14-14w	732	3043
Stanolind, Krug "A" 8, swc ne 27-14-14w	3336	3015
Wolf Creek, Rouback "B" 5, c e½ nw nw 15-14-15w	1788	3232
Jones & Shelburne, Kuhnle 3, c n½ sw nw 4-15-12w	2347	3046
Phillips, Roesner 1, c s½ nw se 9-15-13w	499	3060
Cities Service, Podszus 6, ne sw sw 25-15-14w	53	3332
Stafford County—		
Stanolind, Martin 9, c e½ sw nw 14-24-11w	3000	3846
Stevens County—		
Stevens Co. O. & G. Co., McClure 1, c 16-32-38w	¶21	2630
United Producers, Statton 1, ne nec 25-33-39w	•	1450
Sumner County—		
Slocum et al, McLaughlin 1, nwc 10-35-2e	70	3503
Kentucky		
Hancock County—		
Lincoln Pet., Johnson 2	•	517
McClean County—		
Hupp et al, Vandiver 2	•	1699
Webster County—		
J. M. Alton, Vaughn 1	•	1101
North Louisiana		
Caddo Parish (Vivian-Pine Island)—		
Burnham Dr. Co., Wilkinson 6, 33-22n-16w	•	2472
Caddo Parish (Pine Island)—		
Lloyd A. Farr, Stiles 5, 17-21n-16w	15	1025
Beaudon & Griffin, Davidson 1, 26-21n-16w	25	931
J. S. Pate et al, Querbes 1 18-21n-15w	•	2440
Magnolia, Dillon Hrs 32, 24-21n-15w	5	1456
R. L. Bornitz, Ramsey 4, 32-21n-15w	50	1583
Roy L. Reese, Norman 1, 1-20n-16w	100	1530
Texas Co., Caddo Oil Field Fee 8, 7-20n-15w	52	1495
La Salle Parish (Urania)—		
Georgetown Oil Co., Baldridge 4, 11-9n-1e	15	1509
Madison Parish (Wildcat)—		
Gulf, Sondheimer 1, 33-18n-12e	•	5545
Sabine Parish (Converse)—		
Noyes B. Livingston, Bowman-Hicks 1, 36-9n-14w	25	3535
Union Parish (Monroe)—		
Memphis Nat. Gas Co., Barr 1, 3-21n-3e	¶1.50	2200
South Louisiana		
Bancroft—		
Crosby Dr. Co., Dickerson 1	144	7336
Baton Rouge—		
Lisbon-Iberia Oil Co., University Hills 3	240	6509
Sugarfield Oil Co., McDonald Community 1	200	6810
Bayou Blue—		
Superior, Schwing 2	•	7006
Caillou Island—		
Texas Co., State 65	32	6021
Chacahoula—		
Sun, Dibert, Stark & Brown 7	816	7383
Chalkley—		
Humble, Hanszen 6	380	8650
Charenton—		
DeArman, Lawes 2	•	3008
Pan American, Ecuer 6-B	12	1239
St. Mary Oil Co., Achee 8	•	1209
Fausse Point—		
Sun, Planters Lbr. Co. 1	•	4711
Texas Co., State 7	•	5421
Garden Island—		
Texas Co., State 42	227	5749
Golden Meadows—		
Bennett, Leo LaFont 3	113	2671
Berkshire, Nicol 14	408	5175
Grand Bay—		
Gulf, State QQ-1	984	10,005
New Iberia—		
Wm. Helis, Bullock A-1	650	6606
Texas Co., Walet 1	15	9116
Perkins—		
Housh & Thompson, Edgewood 1	•	7515
Potash—		
Humble, Orleans Levee Board 42	373	7956
Ville Platte—		
Continental, Haas 5	216	9094
West Hackberry—		
Stanolind, Cameron School Board 21	292	9337
Texas Co., State 29-B	•	8740
Beauregard Parish—		
Atlantic, Whitmer 1, Neale area, 26-3s-11w	696	8370
Iberia Parish—		
Plymouth, McHugh Heirs 1, Bayou Pegion area, 13-12s-10e	714	8072
Terrebonne Parish—		
Texas Co., State 4	•	10,210
Michigan		
Allegan County—		
Spencer Cook, Essink 1, se se ne 4-3n-14w	250	1470
Socony-Vacuum, Kluinsteker 3, nw nw nw 10-4n-13w	50	1643
Isabella County—		
Cities Service, Parsell 1, nw nw ne 17-16n-3w	215	3727
Gulf, Russell 2, ne nw ne 20-16n-3w	100	3717
Kent County—		
Certain-Teed, Fee 14, nw nw nw 3-6n-12w	225	1785
Rex Oil & Gas Co., Central Land 1, se nw ne 3-6n-12w	130	1776
Monroe County—		
H. T. White, Delaney 2, ne nw sw 19-6s-6e	5	2157
Bridger Basin, Dusseau 2, se se nw 19-6s-6e	20	2190
Vanco Oil Co., Montry 2, sw se sw 30-6s-6e	160	2194
Clark & Johnsons, Osterhout 2, ne nw nw 30-6s-6e	120	2117
Ottawa County—		
Mesel & Spielbergs, Lipski 1, sw ne sw 14-7n-13w	50	1859
Mississippi		
Yazoo County (Pickens Wildcat)—		
Kingwood et al, Wilbur 1, 31-12n-3e	818	4835
Yazoo County (Tinsley Dome)—		
Union Prod. Co., Jennie Stevens 5, 11-10n-3w	440	4520
Missouri		
Schuyler County—		
Baldwin's Johnson 1-A, nw ne ne 21-65n-15w	•	1310
New Mexico		
Eddy County—		
Aston & R. W. Fair, State 1-B, sw ne sw 32-17s-30e	•	2934
Banner Oil Co., Miller 1, sec ne 4-18s-29e	96	2588
R. J. Johnston et al, Travis 2, ne sw nw 26-17s-27e	•	621
Sam Sanders et al, Berry 1, sw ne ne 24-17s-27e	25	519
R. R. Woolley et al, Fee 3-D, sec nw 31-17s-30e	250	2811
Lea County (Emnice)—		
Ohio, State-McDonald 16, ne se nw 13-22s-36e	360	3790
Lea County (Halfway)—		
Argo Oil Corp., State 2, se sw nw 16-20s-32e	192	2683
Lea County (Hardy)—		
Two States Oil Co., Marshall-Ohio 2, c se sw 27-21s-37e	50	3738
Lea County (Lynn)—		
Culbertson & Irwin, Langford 1, c ne nw 25-23s-36e	35	3618
Lea County (Penrose)—		
Gulf, State-Cole 2-A, c nw sw 16-22s-37e	36	3710
Humble, Greenwood 5, c ne se 9-22s-37e	384	3725
E. G. Rodman-J. C. Clower, State-Humble 1, se ne se 29-22s-37e	60	3678
Stampfli & Martin, Glier 2, ne se ne 33-22s-37e	65	3701
Lea County (Skelly)—		
Gulf, State-Cole 1-C, c se ne 32-22s-37e	7	3700
R. Olsen Oil Co., Blinebry-Texaco 1-A, c se ne 30-23s-37e	154	3636
Lea County (Vacuum)—		
Dr. & Exploration Co., State-Shell 4-M, se ne se 29-17s-35e	180	4600
Magnolia, State-Bridges 56, c ne se 14-17s-34e	145	4670
State-Bridges 57, c nw nw 23-17s-34e	245	4700
Standard of Texas, State 4-3-32, c se nw 32-17s-35e	360	4620

*Failures; †Junked; ¶Million cu. ft. gas.

United States Well Completions—*Continued*

New York

Allegany County—

Company, Well and Location	Init. Prod. Bbls.	Depth
Liberty Share Corp., Lee farm, Bolivar	2	1390
R. B. Moore et al, Curtis farm, Bolivar	5	1280
Moore & Repp, Hatch farm, Wirt	7	1273
R. B. Moore No. 6, Daniels farm, Bolivar	5	1378
Messer Oil Corp., Miles farm, Bolivar	10	1382
Cretekos-Vossler Oil Co., Norton farm, Scio	5	1015
L. H. Richardson et al, Watson farm, Alma	6	1240
Bradley Prod. Corp., Monitor farm, Alma	5	1252
Messer Oil Corp., Phillips-Herrick farm, Alma	7	1320
Wm. McEnroe & O. W. Brown, Bellamy farm, Alma	7	1269
Marsh Oil Co., Withey farm, Bolivar	7	1340
L. H. Thornton et al, Brown farm, Alma	12	1269
Gray Oil Co., Smith-Gray farm, Genesee	6	1365
Gas Wells—		
Empire Gas & Fuel Co., Sam Crandall farm, Independence	¶60	4580
Water (Intake) Wells—		
Ebenezer Oil Co., Jerrick farm, Alma	..	1310
LeMont Oil Co., Pierce farm, Wirt	..	1321
Helen Randall, Reid farm, Alma	..	1335
O. D. Underwood et al, McDivitt farm, Bolivar	..	1274
A. C. Shaner Oil Co., Childs farm, Clarksville	..	1270
Messer Oil Corp., Courtney Hollow farms, Clarksville	..	1332
Courtney Hollow farms, Clarksville	..	1326
Willets & Paul Corp., Lot 22, Genesee	..	1452

Ohio

Jefferson County—

R. J. Braden Co., Wiggington Bros. 2	•	1560
Knox County—		
Brooks Johnson et al, Snider 1	¶.24	3065
Licking County—		
Ohio Fuel Gas Co., Barnes 1	•	2713
Medina County—		
Preston Oil Co., Packard 3	40	487
Marine Trust Co., Franks 49	12	472
Thornton Prod. Co., Sanford 06	5	424
Sanford 012	5	419
Sanford 014	5	370
Monroe County—		
Briggs O. & G. Co., Hogue 2	2	851
Muskingum County—		
Palmer & Guisinger, Burton 1	•	4182
Noble County—		
Wilbur Keith et al, Smith 1	•	1255
Perry County—		
Hover Oil Co., Griggs 1	¶.50	925
Washington County—		
J. L. Bachelor et al, Sheets 2	5	568

Oklahoma

Caddo County—

Newsome, McKenna 1, sw sw ne nw 31-6n-9w (OTD 4980)	•	3520
Newsome et al, Westerfield 1, se nw nw 31-6n-9w	•	3532
Carter County—		
Sinclair-Prairie, Richards 20, nw sec nw 9-4s-3w	454	1081
Cotton County—		
Shasta Oil Co., McQuown 2, se se nw se 32-1s-10w (OTD 2135)	15	2158
Creek County—		
McAdams et al, Fast 2, nw se ne 37-17n-9e	175	2764
Wright, Bucktrot 16, ne sw ne 24-17n-10e	•	2478
Strozier, Anthis 5, sw sw se ne 36-17n-11e	¶5.00	2048
Sinclair Prairie, Keiffer 25, sw se ne ne 17-17n-12e	5	1537
Hughes County—		
Pace, Cahill 1, c e½ ne sw 2-6n-8e (Pb 950)	•	2917
Jackson County—		
Burnham, Thelma 3, ne sw se 6-1s-19w (OTD 2420)	25	2694
Kay County—		
Shell et al, Lawrence 7, nw se nw 5-28n-1w	70	2793
Kiowa County—		
Magnolia, Crossley 1, swc se 34-7n-17w	•	1180
Lincoln County—		
Alma, Sedlacek 1, c n½ nw sw 2-12n-5e	160	4531
Jones Associated, Warren 1, nwc sw 28-15n-5e	•	3539
Tarhell, Carney 1, swc ne 34-15n-5e	•	66
Logan County—		
Ohio, Knight 1, se ne sw 12-17n-1w (OTD 5088)	4	5119
McClain County—		
Benedum et al, James 1, sw ne se 9-5n-3e	675	3620
Muskogee County—		
Arthur Oil Co., Siebold 2, c s½ sw 1-14n-17e (OTD 2037)	•	2170
Howard, Jefferson 3-A, se swc nw 33-15n-15e	•	2185
Parks, Grimstead 2, nw ne nw ne 20-14n-19e	•	1320
Okmulgee County—		
Dow, Spurgin 4-A, sw sec nw 13-14-14e	¶0.5	553
Oklahoma County—		
I. T. I. O., Button 4, nw sw sw 19-11n-2w (OTD 6510)	26	3037
Oils, Inc., Thompson 1, nw sw nw nw 2-11n-3w (OTD 6537)	•	6185
I. T. I. O. et al, Lawrence Pl 3, nw ne sw ne 15-11n-3w (OTD 6466)	47	6541
Osage County—		
Magnolia, Butts 3, sw se sw 14-26n-6e	175	2930
Pawnee County—		
Platter, Tillock 2, sw swc ne 5-20n-9e	¶2.4	1822
Pontotoc County—		
Senora, Tucker 3, ne sw ne 35-5n-4e	280	2520
Superior, Summers 6, se nw nw 36-5n-4e	305	2612
Hennan et al, Wooley 1-A, sw nw sw 22-2n-7e (OTD 3942)	•	3279
Magnolia, Burris "B" 91, se sw se ne 28-2n-7e (OTD 3552)	¶10	1345
Pottawatomie County—		
Alma, Spencer 1, ne se se 24-6n-4e	82	2865
Iglehart, Campbell 2, ne sw sw 4-6n-5e (OTD 4183)	42	4156
Shafer, Shrader 2, nw se ne 6-6n-5e	76	4178
Patterson Mann 2, se ne sw 19-6n-5e	•	2939
Magnolia, Tull Fyke "G" 6, sw ne ne 29-7n-5e	150	4283
G. & M., Pierce 1, nw ne ne 6-10-4e	118	4484
Dunnett, McDaniel 2, swc se 31-11n-4e	614	4465
Stephens, Copeland 1, sw nw nw 5-6n-5e (TD 4358)	•	4324
Seminole County—		
Villines, Millsap 3, se nw sw 23-7n-5e	•	3092
Stanolind, Aldridge 1, se nw ne se 32-9n-8e	450	4394
Riverland, Davis 1, sw nw ne 3-10n-5e	81	4644
McIntyre, Johnson 6, nw se ne 10-10n-8e	•	1691
Magnolia, Reed 6, sw se se 30-7n-8e (OTD 4265)	•	4245
Stephens County—		
Carter, Bank 1, nec se 16-1s-5w	•	551
Pace, Toney "B" 2, sw nw sw ne 27-2s-7w	•	1833
Pace, Parker 3, ne nw se se 11-2s-8w	•	1766
Wagoner County—		
Cahill, McCall 1, nec 10-17n-15e	•	1161
Oklahoma Oil Corp., Geiger 6, c w½ se nw 12-17n-15e	¶.35	978
Joseph, Liston 7, se nw nw 26-17n-15e	•	1060
Goble, McGee 1, nw ne se 34-18n-15e	•	1143
Shouse, Walcott 2, sw ne nw 36-18n-15e	•	1029

Pennsylvania

BRADFORD DISTRICT

N. V. V. Franchot, Mgr. Harrington	5	....
Duffytown Oil Co., Sullivan	1	....
Mathew Lippert et al, Lippert	25	....
Glen McCool et al, fee	2	....
Melvin Towne Oil Co., fee	2	....
Forest Oil Corp., 5 wells	5	....
Forest Pet. Corp., 2 wells	2	....
Niagara Oil Corp., 4 wells	4	....
Bradford Tr. Co., 14 wells	14	....
Water Intake Wells—		
D. E. Quinlan Estate, fee	..	....
Underwood & Moody, Loop	..	....
Pine Run Oil Co., Bing 130-1-2-3-4-6	..	....
Forest Oil Corp., 2 wells	..	....
Forest Pet. Corp.	..	....
Niagara Oil Corp., 5 wells	..	....

MIDDLE DISTRICT

Venango Oil & Land Co., Lower farm	½	....
S. R. Lewis et al, J. M. Laughlin	¶	....
S. E. Kapp, Lester	½	....
Water Intake Wells—		
Joseph Karl et al., lot 106	..	....

BUTLER-ARMSTRONG DISTRICT

William Pfeifer & Ethridge, Ira Behm	•	....
Heck, Larkin et al, Gottleib Jeuther	7	....

SOUTHWEST PENNSYLVANIA

Allegheny County—

Otto Dairy Co., Fee 1	¶.06	1700

East Texas

Kilgore Area—

Roosth & Genecov, Kilgore Nat'l Bank 1 (5/100-ac)	750	3590
Sinclair Prairie, King 63-B, Tr. 1 (337.6-ac)	2400	3502
Longview Area—		
Coastal Dev. Co., Flewellen 29 (200-ac)	1200	3645
Magnolia, White 27 (80-ac)	3600	3537
Anderson County (Cayuga)—		
Carter-Gragg Oil Co., Goode-Tidal 6	195	4001
Anderson County (Long Lake)—		
Hunt Oil Co., Hathcock-Gulf 3	83	5325
Hopkins County (Wildcat)—		
W. P. Vaughn et al, Mary Chapman 1	•	4064
Kaufman County (Wildcat)—		
P. S. Groginski-E. J. Gannon Jr., Eli Brown 1	•	3042
Limestone County (Wildcat)—		
J. J. Tyrell-Chister Oil Co., Easterling 1	•	4655

North Texas

Archer County (Hull-Silk)—

Chapman-McFarlin, Wilson 5-D	1270	4283
Wilson 4-E	1008	4425
C. B. Christi et al, White 1, sec 34	720	4416
Cities Service, Wilson 28-C	1000	4407
Continental, Wilson-McCrory 10	1668	4370
Bert Ligon et al, White 3-D, lot 1	178	3906
Louis Sikes et al, Wilson 1, sec 43	600	4029
Texas Co., Wilson 38-A	984	4400
Archer County—		
Bert Ligon et al, Wilson 3-E	•	1642
Panhandle Ref. Co., Green 5-C	52	1142
Archer County (Wildcat)—		
W. E. Stephens et al, Adae 1	•	4989
Baylor County (Wildcat)—		
Hall-Jordan Oil Co. et al, Green-British 1	736	3064
Clay County—		
E. N. Costley et al, McInnes 2-B, blk 58	280	1092
Clay County (Wildcats)—		
Akin-Dimrock & Costley, Perker 1	•	1500
Harvey Dr. Co., A. Culver 1	•	1302
W. R. Lyon et al, Chapin 1	•	1178
G. D. Rigsby et al, fee 1, blk 19	•	1340
Cooke County—		
Bridwell Oil Co., Parkey 14	18	752
W. H. Peckham et al, Mount 1	•	1825
Cooke County (Walnut Bend)—		
Ed Cox-Jake Hamon, Neu-Texaco 7-B	696	4933
Jack County (Wildcat)—		
Forbess & Rochell, Carter 1	7	444
Jack County—		
Forbess & Rochell, Carter 2, lot 7	•	465
Montague County (Wildcat)—		
Sinclair-Prairie & Gibson-Jennings, Holt 1-C	•	1943
Wichita County (K-M-A)—		
Barrow-Grace & Wood, Birk 1-A	696	4116
Blanco Oil Co.-Al Buchanan, Thom 1	832	3863
Granite Oil Trust No. 2, Martin 3	608	3890
Continental, Waggoner Bros. 9-B-C	296	3986
Hanlon-Buchanan, Fassett-Tuttle 9E	460	4046
Mitchell & Buzzard, Mitchell 3	600	3855
Royal Pet. Co., James 5	490	4001
Target Dr. Co. et al, W. Burnett 1	112	4086
Texas Co., Thom 4	680	3853
Wichita County—		
J. M. Corbett et al, Dodson 2	•	1373
Lawsonia Waggoner Est. 2-AA	104	1613
Wichita County (Wildcat)—		
W. B. Omohundro-E. C. Harlin Jr., Kempner 1	•	5650
Wilbarger County—		
W. B. Omohundro et al, Waggoner Est. 2	17	1134
Paradise Oil Co., Waggoner Est. 5-B sec 30	185	1560
Young County—		
W. G. Horn et al, Gregg 9	•	852
Moran & Wotola Roy. Co., Howard 18	•	945

Texas Panhandle

Carson County—

Magnolia, fee (Tr. No. 244) 74	503	3152
Texas Co., T. J. Boney 22	466	3120
Gray County—		
Cities Service, J. F. Meers 6-C	149	3245
Gulf, H. H. Merten 4	238	3289
King Oil Co., Durkin-Rice 5	375	3285
H. Horner 12	403	3257
Vallmert (north) 14	381	3280
Ryan Consol'd Pet. Corp., Barrett 4	192	3295
Shell, Finley-Hoffman 11	268	3144
Skelly, Schafer 106	437	3258
Hutchinson County—		
Danube Oil Corp., Cockrell 2	21	3055
J. M. Huber Corp., Weatherly 7	1472	3018
Phillips, Haile 10	415	3093
Texas Co., R. L. Pond 23	635	3040
Moore County—		
Texoma Nat. Gas. Co., Sneed 22-P.	¶10.8	2950

•Failures; †Junked; ¶Million cu. ft. gas.

United States Well Completions—*Continued*

West Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Andrews County (Means)—		
Humble, Means 77	1015	4520
Crane County (Gulf-Waddell)—		
Gulf, Henderson 21	1376	3533
Ector County (Wildcat)—		
Ralph Gill et al, Parker 1	*	5760
Ector County (Foster)—		
Atlantic Ref. Co., Johnson 3-E	523	4250
Broderick & Calvert, Witcher 21	770	4170
T. P. Coal & Oil Co., Johnson 2	884	4280
Ector County (Goldsmith)—		
Gulf, Goldsmith 266 (19,840-ac)	1670	4234
Phillips-Pure, Cowden 81	674	4158
Ector County (Jordan)—		
Gulf, University 1-N	2507	3609
Kewanee Oil Co., University 5-B-a	1759	3578
Ector County (North Cowden)—		
Broderick & Calvert, Holt 10-A	604	4440
Rhodes-Tompkins-Richmond Dr. Co., Johnson 1	406	4187
Gaines County (Cedar Lake)—		
Stanolind, Riley 1	22	4864
Gaines County (Seminole)—		
Amerada Pet. Corp., Riley 3-A	718	5330
Atlantic, Riley 4-B	627	5261
Osage Dr. Co., Tippett-Ohio 7-A	670	5344
Hockley County (Slaughter)—		
Texas Co., Slaughter 8	759	4990
Howard County—		
Sinclair Prairie, Dodge 66	124	2804
Loving County (Wildcat)—		
J. E. Whiteside & L. Link, Whiteside 1	*	5284
Lynn County (Wildcat)—		
Guthrie-Lake Oil Co., Shoe 1	*	802
Scurry County (Sharon)—		
Helmerich-Payne, Martin 4	75	2514
Mudge Oil Co., Holcomb 1	165	2485
Upton County (McCamey)—		
Harvey-Sargent-Rutter, Cordova Union-Texaco 10	407	2270
Humble, Reese 9	733	2679
Ward County—		
Edwards-Moore-Donnelly, Reynolds-Atlantic 2	485	1892
Gulf, Hutchings 139 (30,450-ac)	1338	2739
Winkler County (Emperor)—		
C. V. Lyman et al, Cowden-Tidal 1	648	3000
Winkler County (Keystone)—		
Sam Weiner et al, Jenkins-Conoco 2	145	3410
Yoakum County (Wasson)—		
Aloco Oil Co., Knight-Texaco 2	815	5270
Anderson-Prichard, Willard-Spearman 4	1718	5160
Argo Oil Corp., Comer 5-A	984	5217
Basin States Oil Co., Jordan-Honolulu 3	578	5210
Continental, Kendrick 3-867	1717	5130
Honolulu Oil Corp., Hovencamp 3-890	1765	5080
Wilder 9-824	904	5145
Humble, Stanford 2-B	137	5125
Oil Dev. Co., Willard 3-763	629	5215
Willard 5-763	668	5215
Willard 14-803	1599	5215
Olson Oil Co., Willard 6-801	1826	5190
Osage Dr. Co., Claywater-Amerada 6	967	5235
Lynn-Shell 4	116	5200
Shell, Baumgart 2-E	1311	5185

West Central Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Brown County—		
Goss et al, Hickman 1	*	1290
Ed Selvidge et al, George 1	*	1335
Callahan County (Wildcat)—		
Green & Owens, Murray 1	*	1821
Jones County—		
Fain-McGaha Oil Corp., Lewis 9	350	1934
J. B. Roberts et al, Tiner 1	*	3222
Shackelford County—		
Gorsuch Oil Co., Gorsuch 5	50	1526
Loggie & Arendt, Ghio 11	20	600
Roark et al, Hickman 3	30	666
Roesser-Pendleton, Inc., Cook 7-B-113	290	1568
Stephens County—		
Ed Adams et al, Sloan 1	*	3636
Taylor County (Wildcat)—		
J. C. Turner et al, Sheppard 1	*	1800

South Texas

CORPUS CHRISTI DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Fayette County—		
F. J. Hynes, A. B. Kerr, Jr. 1 (WC) John Parrott sur	*	3501
Jackson County—		
Magnolia, West 62-A (West Ranch)	650	5126
Stanolind, L. Ranch Co. 5 (West Ranch)	500	5760
Jim Wells County—		
Rodney Delange, Maggie McNeil 5 (Wade City)	500	4952
Henshaw Brothers, Maggie McNeil 1 (Wade City)	¶10	4980
Magnolia, Candelario Elizondo 3 (Ben Bolt)	750	5270
Kleberg County—		
Humble, Mork 1 (WC) Rincon de Santa Gertrudus gr	*	7920
Live Oak County—		
H. F. Baker, Saunders 1 (WC) Stephen Hays sur	¶50	341
Moore Dev. Corp., Rosebrock 1 (Oakville)	75	2996
Nueces County—		
E. A. Graham, Mary Reidel 1 (Minnie Bock)	200	3821
Humble, Duncan et al 1 (WC) FB &E subd	*	8050
Reed & Cox, Parr 1-A (Minnie Bock)	300	3820
Southern Mineral Corp., Richard King A-7 (Bentonville-King)	450	5417
Union Producing Co., Wallace 3 (Agua Dulce)	¶20	5050
Windsor Oil Co., Howze 3 (Minnie Bock)	150	7059
Refugio County—		
Barnsdall, Fagan 2 (WC) Fagan Nichols sur	*	6155
San Patricio County—		
Houston Oil Co., Baldwin et al 11 (E. White Point)	500	5680
H. H. Howell, Gilchrist 1, (McCampbell)	350	8356
O. W. Killam, Taft Syndicate 11, (East White Point)	500	5612
Kirby Sharp & Fred M. Wood, Hart 1 (WC) W. C. Burgess sur	75	7411
Southern Minerals Corp. Usher 1 (McCampbell)	400	7315
R. A. Welch, Fee 8 (E. White Point)	500	5688
Victoria County—		
Gulf, Traylor B-33 (Heyser)	400	5498
Colton & Colton, Mahon 1	70	2698
John G. Mayo et al, Hubalak 1 (WC) Valentine sur	*	6121

LAREDO DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Duval County—		
Adelon Oil Corp., Solar Oil Co. 1 (Piedras Pintas)	*	1071
Bridwell Oil Co., Parr 1, (WC) J. Poitevent sur 276	*	4502
Magnolia, D. C. R. C. 2, (132) (Cedro Hill)	15	1457
M. M. Miller & Sons, Fee 21 (Longhorn)	500	4038
Pat R. Rutherford & R. S. Waldron, Driscoll 1 (WC) sur 243	*	4513
Wellington Oil Co., J. F. Welder Est. 19-C (Seven Sisters)	95	2560
Sun, Anita de Valaeria 2 (WC) Sec 300	*	4845
Jim Hogg County—		
Humble, King Ranch-Colorado 6 (Colorado)	275	3054
Mestina O. & G. Co. 4 (6) (WC) S. A. Baluarte gr	*	6042
V. G. Schimmel, Palacios 1 (WC) sur 230	*	3117
Sun, East 2 (WC) sec 39	*	5000
McMullen County—		
A. van Desar, Brown 1 (WC) sur 54	*	791
Morris Dr. Co., Clounch 2 (South Callihan)	*	1021
Meier 2 (South Callahan)	*	1020
Tybro Roy. Corp., Martin 2 (WC) sur 18	*	753
Starr County—		
W. R. Davis Co., Slick Est. 18-B (Rincon)	*	4225
Humble, McGill Bros. 56 (Kelsey)	425	4733
Montalvo 2 (Sun)	450	4962
Sun, McKinney 10 (Sun)	*	4981
Webb County—		
Arkansas Fuel Oil Co., Adami 8-B (Adami)	15	996
Colmena Oil Co., Adami 1 (Adami)	25	988
Humble, Yaeger 3 (Adami)	50	993
Yaeger 6 (Adami)	50	996
Magnolia, Volpe-Benavides 30 (Volpe)	350	2488
Volpe-Benavides 34 (Volpe)	*	2608
Zapata County—		
Buffalo Oil Co., Hinnant 30-C (Mirando Valley)	75	1885
Hinnant 51-C (Mirando Valley)	75	1882
Hinnant 3-E (Mirando Valley)	*	2916
Interstate Minerals, Rufino Lopez 42 (Mirando Valley)	80	1738
Kleiner & Hill, Trevino 20 (Escobas)	25	1254
J. P. Nash, Haynes 35-A (Comitas)	14	1151

SAN ANTONIO DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Bexar County—		
Beck & McDonald, Gembler 1 (Eckert)	*	984
SKC Prod. Co., Barker 2 (Gas Ridge)	*	410
Guadalupe County—		
C. E. Euton, Echols 1 (WC) E. Smith sur	*	813
Edgar A. Weyel et al, Schraffel 2 (Elm Creek)	*	725
Medina County—		
Charles H. Wagner et al, Medina Irrigated Farms A-47 (Chicon Lake)	2	403
Travis County—		
O. L. Patton, Jones 1 (WC) Rubin Hornsby sur	*	550

Texas Gulf Coast

Company, Well and Location	Init. Prod. Bbls.	Depth
Anchor—		
Humble, Carr 1	138	10,491
Big Hill—		
Marrs McLean, Staite 1	*	3213
Friendswood—		
Humble, Pendervis 2	*	6104
Hardin—		
Woodley, Barrett 1	*	7670
Hastings—		
Humble, Alexander 11	188	6085
Hilje—		
Mackhank, Wislan 1	38	5232
Lovell Lake—		
Humble, Broussard Trust 14	174	7790
Markham—		
Hamil & Hamil, Hamil 1	*	1550
North Creek—		
Strake, Phelan 1	*	8941
Orange—		
Gulf, LaFlour B-4	672	5961
Seabreeze—		
Sun, Whitney 1	100	8469
Segno—		
Humble, Kirby Lbr. Co., B-X-21	501	8220
South China—		
Titantic et al, Guiterman 2-B	85	7525
Thompson—		
Gulf, Wolters 7-B	128	5425
Humble, Davis 27	580	5410
Harris County—		
Carlton et al, Bender Estate 1, e of Humble, S. W. Singleton sur	*	8000
Wharton County—		
O. C. Garvey, Menefee 1, n of Louise, S. P. Middleton sur	*	4604

West Virginia

Company, Well and Location	Init. Prod. Bbls.	Depth
Clay County—		
Virginian G. & O. Corp., Summers 1279	5	1868
Thompson Gas Co., Thompson Land & Coal 41	¶.32	2008
Elk River Gas Co., Brown 14	¶.17	2431
Kanawha County—		
Columbian Carbon Co., Mairs 1	¶6.37	4990
Hanna 1	¶3.18	4924
United Carbon Co., Long 816	¶3.70	5051
Lincoln County—		
Sand Creek Oil Co., Caldwell 1	3	1500
Federal Gas Co., Tudor 2	¶.13	3800
Monongalia County—		
Philadelphia Oil Co., Moore 2	5	3419
Putnam County—		
Laywell Gas Co., Johnson et al 1	¶.08	2146
R. H. Adkins, Hall 1	¶.07	2165
Roane County—		
Big Springs Branch O. & G. Co., Cox 1	*	1808

*Failures; †Junked; ¶Million cu. ft. gas.

University of Texas reports on San Saba County shale

An oil shale in the Llano mineral region northwest of Austin that may solve the petroleum problem when crude oil wells run dry is described in a University of Texas geology circular issued last week.

Prepared by Frederick B. Plummer, geologist for the Bureau of Economic Geology, the circular with large maps was prepared in answer to numerous requests received by the university on the status of its investigation.

Laboratory test yields for 63 samples of the petroliferous shales have averaged 13.4 gallons per ton, Plummer reported.

Shipped immediately to university laboratories in air-tight jars, samples were placed in 750-degree ovens. They were roasted for five hours and the volatile oil and hydrocarbons driven off and collected through condensers in flasks.

Plummer said the shale deposits, although they have an exceedingly rich yield for petroliferous shales, are not economically practical at this time when there is plenty of oil to be had for the drilling. But, he stated, when the principal oil fields of the Southwest are exhausted the rich shales of San Saba County will constitute a future reserve. He suggested hydrogenation might reveal other by-products.

WILDCAT REPORT
New Starts and Completions

ARKANSAS
FIRST REPORT

Yell County—Edward C. Harvey (Tulsa), unknown, ne se 30-2n-25w, mat.

CALIFORNIA
FIRST REPORTS

Los Angeles County—Kasanke's J. F. Grazide 1, sec 27-2-10, Puente Hills area, lcn.
Kern County—North Kern Oil Co.'s Abbott 1, sec 7-27-19, Semitropic area, rig.

COMPLETIONS

Fresno County—Tide Water's Guardian 22, sec 2-20-15, bottomed 3612 feet, flowed 1400 barrels daily 32.2-gravity 2.4 percent cut, top Temblor sand 3266 feet.
Tulare County—R. W. B. Gas & Oil Co.'s No. 1, sec 11-24-23, bottomed 2675 feet, little gas show, Alpaugh area, abnd. Standard Oil Co.'s Tulare Farms 1-2, sec 34-24-23, Trico area, 10,150,000 gas from 2495 ft.
Ventura County—Ohio Oil Co.'s Vail 1, sec 10-2-19, abnd 5714 ft in conglomerate, Semi area.

SOUTH LOUISIANA
FIRST REPORTS

Allen Parish—W. T. Burton's Calcasieu National Bank 1, North Elton area, se se sec 23-6s-3w, lcn.
St. Mary Parish—Sun's Belle Isle Corp. 1, Belle Island area, nwc of sec 6-18s-11e, lcn.

COMPLETIONS

Beauregard Parish—Atlantic's Whitmer 1, Neale area, sec 26-3s-11w, 696 bbls 35.5-gravity oil daily, 8370 ft.
Iberia Parish—Plymouth's McHugh Heirs 1, Bayou Pegion area, sec 13-12s-10e, 714 bbls 35.2-gravity oil daily, 8072 ft.
Terrebonne Parish—Texas Co.'s State 4, Coon Point area, 23s-14e, abnd 10,210 ft, salt.

NORTH LOUISIANA
FIRST REPORT

Grant Parish—J. B. Epperson's Reed 1, sw sw 10-7n-3w, sp.

COMPLETIONS

Madison Parish—Gulf's Sondheimer 1, se nw 33-18n-12e, elev 93.4 ft, abnd 5545 ft.
DeSoto Parish—Foster, Smith et al, McRae 1, nw se 5-12n-16w, rig.

MICHIGAN
FIRST REPORTS

Allegan County—Fortney Oil Co.'s Scharf 1, nw ne 17-3n-14w, dr.
Ionia County—Neil Wagnaar's Hooper 1, nw sw se 29-5n-8w, rig.
Kent County—H. C. William's Rathbun 1, se sw 16-6n-11w, rig.
Ottawa County—Red-Man Oil Co.'s Nibbelink 1, se nw 18-7n-14w, rig.
Shiawassee County—Coryell Oil Co.'s Haviland 1, se se 31-5n-3e, lcn.

MISSISSIPPI
FIRST REPORTS

Holmes County—Exchange Oil Co.'s Russell 1, ne se 32-15n-2e, mat.
Humphreys County—L. B. Allen's Clark 1, sw sw 4-13n-4w, mat.
Madison County—Ralph A. Johnston's Young 1, c se ne 32-11n-4e, mat. F. H. Ray 1, c se sw 6-8n-3e, lcn.
Yazoo County—Sells Pet. Co.'s unknown, sw se 34-9n-4w, lcn.

COMPLETION

Yazoo County—Kingwood Oil Co. et al's Wilburn 1, ne ne 31-12n-3e, elev 257 ft, Wilcox 1070 ft, Midway 3045 ft, Midway chalk 3957 ft, Eutaw (Blossom) 4670 ft, oil sand (Eutaw) 4876 ft, flowing 1000 bbls fluid daily through 2-in open choke of which 818 bbls was oil, td 4885 ft.

MISSOURI
COMPLETION

Schuyler County—T. E. Baldwin's Johnson 1-A, nw ne ne 21-65n-15w, top Viola 1280 ft, abnd 1310 ft.

NEBRASKA
FIRST REPORT

Richardson County—Pawnee Royalty Co.'s Boice 1, csl n½ ne ne 18-1n-16e, otd 2292 ft, to dd.

OKLAHOMA
FIRST REPORTS

Kiowa County—Debolt s Phipps 1, swc se 27-7n-19w, spd.

Stephens County—Jackson's Marshall 1, se ne ne 1-1s-6w, dr.

Tillman County—Johnson's Longacre 1, nec se 32-2s-17w, testing at 3268 ft.

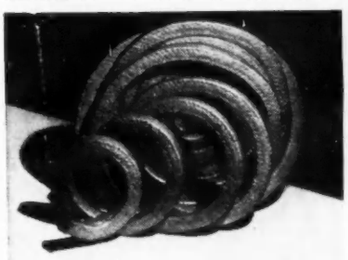
COMPLETIONS

Atoka County—Brookshire & O'Mara's Jones 1, swc nw 29-3s-12e, 10 mi se Atoka, Mayes 1945 ft, Caney 1250 ft, stuck pipe base Cretaceous 570 ft, abnd 2045 ft.
Hughes County—Walker & Johnson's Rogers 2, nec 24-7n-9e, 6 mi e Holdenville, Calvin 555 ft, abnd 598 ft. Thompson Brothers' Meadors 1, nec 23-9n-9e, Fuhrman area, Cromwell 3229 ft, flowed 15 bbls by small heads, abnd 3240 ft.
Lincoln County—Sand Springs Home's Cook 1-A, nw sw ne 28-17n-6e, 3 mi w Cushing, spud and abnd.
Logan County—Helmerich & Payne's McMahon 1, swc se 31-17n-1e, 3½ mi s Langston pool, top Dolomite 5258 ft, top first Wilcox 5272 ft, top second Wilcox 5420 ft, pb 5268 ft, perforated 35 shots 5235-65 ft, acid 4000 gals, 53 bbls, 43.2-gr.
Seminole County—W. A. Mason et al's Reid 1 "A", nwc ne 13-9n-7e, between E. Seminole and Bethel pools, top Senora sand 2251 ft, td 2294 ft, 3,600,000 cubic feet of gas.

SOUTH TEXAS
FIRST REPORTS

Bexar County—C. G. Bigby & B. G. Pierce's Winchester Kelso 1, F. Rodriguez gr 9 mi s San Antonio, prep to mi.
Hidalgo County—Royal O. & G. Corp.'s Chopa 1, por 39, jurisdiction of Reynosa, 1 mi n Sanfordyce production, ru.
Jackson County—W. Stewart Boyle's Ben-

KEEPING 'EM ROLLING — By WESTCOTT



J-M INTERLOCKED: Strands of asbestos yarn form a solid, square braid that cannot ravel or come apart.

TOM'S ANSWER...*Buy J-M Interlocked Packing and Reduce Shutdowns*

EVERY time you replace packing, you lose far more than bare material costs. Time, labor, general shutdown charges are your real expenses. And those are the costs you reduce with J-M Interlocked — the greatest single improvement ever made in braided packing. It's woven solid . . . has no layers to wear through . . . cannot ravel. It gives the longer, more efficient service that's typical of the complete J-M line. For details, write for the new J-M Packing Catalog. Johns-Manville, 22 E. 40th St., New York, N. Y.

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PACKINGS & GASKETS
THERE'S A DISTRIBUTOR NEAR YOU

nett Ruch 1, 3776 ac tr, Ramon Musquez gr, 2 mi sw West Ranch fld, lcn.

Jim Hogg County—Maryland Oil Corp.'s Izaguirre 1, 3 mi n Kelsey fld, lcn. Sun's East 3, sur 38, 6½ mi e Randado, dr 2185 ft.

Jim Wells County—W. Calvert's Spoetze 1, 150 ac tr, Wm. Hobbs sur, Ab-214, 2000 ft n Wade City discovery, prep to mi. Henshaw Bros.' Wendt 1, blk 4, share 7, George H. Reynolds sur, 12 mi n Alice, mir. Windsor Oil Co.'s (R. A. Josey, Inc.) Dusel 1, blk 6, I. Lang subd, Casa Blanca gr, 2 mi ne Wade City fld, sp.

Karnes County—Luling O. & G. Co.'s Nilson 1, 84¾ ac tr, Carlos Martinez sur, 3 mi se Green, lcn.

Kendall County—C. M. Dewey's Seidenstick-er 3, dr 1160 ft.

Kimble County—Austin Bridge Co.'s Wilkinson 1, se sec 24, Brooks & Burleson sur, 13 mi nw Junction, started by C. H. Wolff, taken over by Austin Co., dr 550 ft.

Live Oak County—H. F. Baker's Sanders 2, 220.4 ac lse, Stephen Hays sur, 2½ mi w Whitsett, 900 ft s No. 1, dr 1025 ft.

Live Oak County—Smith & Storey's Lyne 2, A. C.-H. Y. B. sur No. 163, 9 mi sw George West, lcn.

McMullen County—I. R. Shelton & J. Pickett's Unknown 1, ne blk 5, John Gibson subd, James M. Jean sur No. 29, Magnolia farmout, ½-mi ne Nixon's Horton 1, 4 mi se Tilden, lcn. C. C. Shumway & C. H. Burn's Shiner Ranch 7, sec 38, Shumway subd of Shiner Ranch, Henry M. Brewer sur ab-65, 6 mi sw Ezell fld, dk. Tubro Royalty Corp.'s Martin 2, H. L. Williams sur 18, 4 mi se Tilden, abnd 753 ft.

Medina County—G. R. & L. J. Dorsey's Robinson 1, John George sur, 8 mi nw Devine, lcn.

Victoria County—Humble's Welder 1, center of combined lots 23 and 24, S. A. & M. G. Railway sur 9, 3 mi n Nursery, ru. Texas Gulf Prod. Co.'s Kester hrs, 20 ac tr, C. M. Creamor sur, 5 mi sw Bloomington, lcn.

Webb County—Cash & Reynolds' Frost Nat'l Bank 1, se ne sec 35, C. C. S. D. & R. G. N. G. Ry sur, blk 1, lcn. Circle Oil Co.'s Hughes 1, sec 1, 1527, lcn. Tidewater's Bruni 8, sec 7, Foltz subd, Mariano Arispe gr, Cole-Bruni dist, lcn.

COMPLETIONS

Duval County—Bridwell Oil Co.'s Parr 1, J. Poitevent sur 276 ab-1617, 9 mi nw San Diego, 1½ mi sw Fitzsimmons fld, 10¾-inch csg 40 ft, Pettus sd 4316-25 ft, dst 4316-25 ft, 2670 ft mud, oil and 450 ft sw, abnd 4502 ft. Pat R. Rutherford & R. S. Waldron's Driscoll 1, lot U, sur 243 ab-290, 7 mi ne Driscoll fld, 11 mi w Benavides, 10-inch csg, 511 ft, Cole 2870 ft, Government Wells 3665 ft, Mirando 3985 ft, Pettus 4215 ft, abnd 4513 ft. Sun's Anita de Valaeria 2, sec 300, Julia Rogers sur, 2080 ft sw No. 1, 10¾-inch csg 656 ft, sd 4718-24 ft, abnd 4845 ft.

Fayette County—F. J. Hynes' Kerr, Jr., 1, 162 ac tr, John Parrott sur, 4 mi nw Flatonia, 1/3 lge, sds 1378-83 and 2632-44 ft, abnd 3501 ft.

Guadalupe County—C. E. Euton's Echols 1, 143 ac tr, E. Smith sur, 3 mi n Lavernia, Elm Creek area, abnd 813 ft.

Jim Hogg County—Humble's Mestina O. & G. Co. 4 (6), San Antonio Baluarte gr, 10 mi se Hebbronville, abnd 6042 ft. V. G. Schimmel's Carlos Palacios 1, blk 14, sur 230, M. Montgomery sur, 3 mi sw Randado, abnd 3117 ft. Sun's East 2, nw sec 39, A. B. & M. sur, 6 mi e Randado, 10¾-inch csg 220 ft, sds 2647-50 ft, 3046-63 ft, 4018-26 ft, 4185-88 ft, abnd 5000 ft.

Kleberg County—Humble's Mork 1, lot 16, blk 25, K. T. & J. Co. subd, Rincon de Santa Gertrudus gr, 4½ mi se Kingsville, 10¾-inch csg 1407 ft, sd 6820-93 ft, abnd 7920 ft.

Live Oak County—H. F. Baker's Sanders 1, 220.4 ac lse, Stephen Hays sur, 360 varas s Frio river, 400 varas w line of lse, 2½ mi w Whitsett, comp as small gas well, shut in, dropped as abnd 341 ft.

McCullen County—A. Van Desar's Brown 1, R. H. Brown sur 54, 8½ mi w Whitsett, 8¼-inch csg 30 ft, abnd 791 ft. Tybro Royalty Corp.'s Martin 2, H. L. Williams sur 18, 4 mi se Tilden, abnd 753 ft.

Nueces County—Humble's Duncan et al 1, center of lot 2, blk 50, F. B. & E. subd, 1 mi sw Flour Bluff fld, abnd 8050 ft.

Refugio County—Barnsdall et al's Fagan 2, Nichols Fagan sur ab-25, 3000 ft w Fagan fld, abnd 6155 ft.

San Patricio County—Sharp & Wood's Hart 1, lot 61, Welder & Odem subd, W. C. Burgess sur, 1 mi n Odem, sd 6907-36 ft, td 7411, pb and set 5½-inch csg 7250, perf 6901-09 and 6910-21 ft, flowed 42 bbls fluid 20 hours, ½-inch choke on 2-inch tubing, 175 pounds pressure on tubing, 36.1-gr oil, new pool.

Travis County—O. L. Patton's Jones 1, Rubin Hornsby sur, 118-ac tr, 7 mi ne Austin, abnd 550 ft.

Victoria County—John G. Mayo et al's Hubalak 1, 252-ac tr, Valentine sur, 3½ mile e East Telferner, Tidewater farmout, 5½-inch csg 870 ft, abnd 6121 ft, Colton & Colton's Mahon 1, Irri. Com. sur 27, 2½ mi nw of Telferner, sd 2693-98 ft, 7-inch at 2696 ft, bottom 2698 ft, flowed 45 bpd, 21.5 gr oil 3/16-inch ch, 960 lbs tubing, 1050 lbs casing pressure. New field.

EAST TEXAS

FIRST REPORT

Falls County—City of Lott's fee 1, W. Gilmore sur, elev 500 ft, Austin chalk 862-1012 ft, Buda 1205-78 ft, Georgetown 1358 ft, Edwards lime 1520 ft, dr 1650 ft.

COMPLETIONS

Cass County—E. A. Stiller et al's Glass 1, J. Paxton Survey, mat for 4000-ft test.

Hopkins County—W. P. Vaughn-L. A. Rankin's Mary Chapman-Employees Reliance Insurance Co. 1, nwc of 160-acre tr, Francis Hopkins sur, ¾-mi nw Tira, elev 412 ft, Austin chalk 2080 ft, Woodbine 2540 ft, Georgetown 3220 ft, Paluxy 3934 ft, abnd 4046 ft.

Kaufman County—P. S. Groginski-E. J. Gannon Jr.'s Eli H. Brown 1, 902-acre tr and Matilda Reynolds sur, 4 mi nw Kemp, elev 382 ft, Pecan chalk 1110 ft, Austin chalk 1790-2295 ft, Woodbine series 2722 ft, abnd in water sand 3042 ft.

Limestone County—J. J. Tyrell and Chister Oil Co.'s Easterling 1, nwc of 137½-acre lease, J. L. Chavert sur, 11 mi e Groesbeck, elev 429 ft, Austin chalk 3674-4020 ft, abnd 4655 ft.

NORTH TEXAS

FIRST REPORTS

Clay County—W. B. Hamilton et al's Ramsey 1, swc blk 84, Byers subdiv, but in Jas. G. Hays sur A-183, sp on 1200 ft test.

Baylor County—Paul B. Scott et al's Farr 1, c ne ne T&NO sec 228, A-877, mim for 3100-ft test.

Jack County—Welch-Hill Oil Co.'s Griffith 1-A, D. D. Brown sur A-1778, 10 mi se Antelope, lcn for 400-ft test.

COMPLETIONS

Archer County—Waldo E. Stephens et al's Adae 1, sec 7, Palo Pinto CSL, A-339, K-M-A lime 3920 ft, Bend 4631 ft, abnd 4989 ft.

Baylor County—Hall-Jordan Oil Co.-W. B. Omohundro's Green 1 (British-American), sec 8, J. E. Hix sur, Canyon pay 3061-64 ft, 3000 gals acid, s & f 184 bbls oil 6 hrs.

Clay County—Harvey Dr. Co.'s Culver 1, blk 42, Specht-McCutchen sur, abnd 1302 ft. W. R. Lyon et al's Chapin 1, blk 81, Byers subdiv, abnd 1178 ft. G. D. Rigsby et al's Rigsby 1, blk 19, Specht-McCutchen sur, abnd 1340 ft. Akin-Dimrock & Costley's Parker 1, blk 134, Byers subdiv, abnd 1500 ft.

Jack County—Forbess & Rochelle's Carter 1, lot 7, J. W. Williams sur, A-877, lime 438-40 ft, sand 440-44 ft, pumped 7 bbls.

Montague County—Sinclair Prairie and Gibson-Jennings' Holt 1-C, sec 36, Kanfman CSL sur, abnd 1943 ft.

Wichita County—W. B. Omohundro-E. C. Harlin, Jr.'s Kempner 1, blk 28, league 1, Denton CSL, K-M-A lime 4310 ft, Bend 5285 ft, abnd 5650 ft.

WEST TEXAS

FIRST REPORTS

Andrews County—Helmerich & Payne's University-Atlantic 1, c ne ne sec 11, blk 11, mim for 5500-ft test.

Crockett County—Clark-Cowden Dr. Corp.'s Atwood 1, c ne ne GC&SF sec 49, blk HH, mim for 2500-ft test. Moore Exploration Co.'s Hoover 1, c ne sw GC&SF sec 16, blk 1, mim; Noelke Liverstock Co. 1, c nw se sec 10, blk GG, mim.

Ector County—Everts Dr. Co.'s Johnson 1, 2200 ft out of SEc T&P sec 30, blk 43, T-1-S, lcn.

Ward County—Atlantic Ref. Co.'s University-Wickett 1, c sw ne sec 12, blk 16, bldg road.

COMPLETIONS

Ector County—Ralph H. Gill et al's Parker 1, ne ne se T&P sec 12, blk 45, T-2-S, elev 3116 ft, anhydrite 1380 ft, Yates 2690 ft, solid lime 3740 ft, abnd 5760 ft.

Loving County—J. E. Whiteside-Louis Link's Whiteside 1, c sw sw T&P sec 24, blk 76, Tsp 1, elev 3263 ft, anhydrite 740 ft, salt 1098 ft, last salt 4954 ft, Delaware lime 5214 ft, sand 5240 ft, abnd in water 5250-84 ft.

WEST CENTRAL TEXAS

FIRST REPORTS

Comanche County—H. S. Bossart et al's Tate 1, 150 ft out of nwc J. M. Robinson sur A-1170, lcn for 900-ft test.

Jones County—M. R. Mead et al's Hicks 1, sec 5, Orphan Asylum Lands, lcn for Palo Pinto lime test.

Shackelford County—L. Mollenkopp et al's Jemeyson 1, sec 489, TE&L Co. sur, dr 295 ft. John E. Carson et al's Elliott 1, c se se sec 48, Blind Asylum Lands sur, sp. Fain-McGaha Oil Corp.'s Lee 1, T&P sec 38, blk 12, machine.

Tarrant County—W. L. Cox et al's Poole 1, J. McDonald sur, machine.

Taylor County—Green & Owens' Bettes 1, J. Walker sur 56, but in R. Ortiz sur 19, sp and sd.

COMPLETIONS

Callahan County—Green & Owens' M. Murray 1, north 117.6 acres of e½ Jacob Trask sur 761, abnd 1821 ft.

Taylor County—J. C. Turner et al's Sheppard 1, sec 19, Blind Asylum Lands, abnd 1800 ft.

TEXAS GULF COAST

FIRST REPORT

Ft. Bend County—W. L. Goldston's Hackstedt 1, Needville area, H. & T. C. 47, lcn.

COMPLETIONS

Harris County—Carlton et al's Bender Estate 1, e of Humble, J. W. Singleton sur, abnd 8000 ft.

Wharton County—O. C. Garvey's Menefee 1, n of Louise, S. P. Middleton sur, abnd 4606 ft.

Cities Service to build Michigan casinghead plant

Cities Service Oil Company has announced plans to construct a casinghead gasoline plant in the Wise field, Isabella County. Scheduled for completion in July, it will be the first casinghead plant for the field.

William M. Barret, Inc.

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Contracts accepted for domestic and foreign projects, using the most improved instrumental and interpretative technique.

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San Antonio—Washington, D. C.

WELL LOGS. Drillers' logs of approximately 4,000 wells drilled in New Mexico are available from Well Log Division, New Mexico Bureau of Mines & Mineral Resources, Socorro, New Mexico. Write for price list A.

HOARD EXPLORATION CO.

Seismic Surveys

Consulting service available

618 ESPERSON BLDG. HOUSTON, TEXAS

NOTES FOR THE Equipment Buyer and User

Gas Mask

ACME PROTECTION EQUIPMENT COMPANY

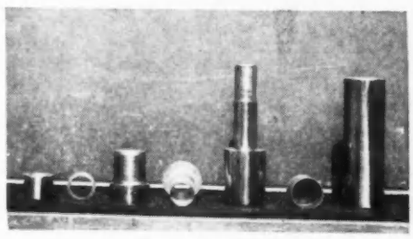
The All-Purpose gas mask, introduced by Acme Protection Equipment Company, Pittsburgh, is designed for protection of industrial workers against fumes, smokes and mists.

The mask is described as providing full vision for the user, protection against carbon monoxide and other gases, a long effective life and a harmless chemical reaction that gives warning by odor as soon as protection against carbon monoxide commences to weaken. Avoidance of mechanical devices that may give trouble, and freedom from dials or indicators that may be hard to read, are described as advantages of a warning agent.

Electrolytic Breaker Box

D. D. RICHARDS AND W. B. O'MARA

A method to control electrolytic action in pumping wells by means of a series of insulated sucker rod boxes and a sub placed between the hold-down body and pump has been announced by D. D. Richards and William B. O'Mara, 2150 Laura Avenue, Huntington Park, California.



Breaker Box and Couplings for Electronic Control.

An insulated coupling is placed between the hold-down body, or shoe, and the pump, degrounding the well. Another coupling is placed above the pump and one just below the polish rod. In crooked holes, an insulated coupling together with conventional-type sucker rod guides are placed where wear on rods is evident.

The insulated pump and sucker rod prevent a circuit for electrolytic action.

Wire Rope Clip

THOMAS LAUGHLIN COMPANY

A new wire rope clip designed with bolts and identical bearing surfaces on opposite sides to equalize the pressure on the rope has been announced by Thomas Laughlin Company, Portland, Maine.

Kelly-Drive Bushing

BAASH-ROSS TOOL COMPANY

A new roller kelly-drive bushing for hexagonal kellys, designated Type 2RH, has been announced by Baash-Ross Tool Company, 5512 Boyle Avenue, Los Angeles. Designed for use both in regular drilling and when drilling through packers, the bushing has been constructed with design changes to allow more sensitive feeding action, more accurate weight indications and to prevent binding, tearing or galling the kelly.

Baash-Ross Type 2RH Kelly Bushing

The kelly contains six sets of rollers,

ONE OPERATOR SAID:

"OUR WIRE LINE TRAVELLED 125 MILES THRU THIS WIPER BEFORE THE WIPER WAS DISCARDED. WE WOULDN'T BE WITHOUT ONE."

A CLEAN LINE ENCOURAGES INCREASED EFFICIENCY OF CREW

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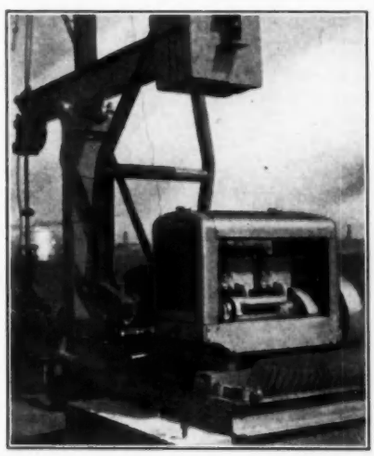
PATTERSON-BALLAGH WIRE LINE WIPER

An Oil field Pumper Engine that can STAND THE GAFF!



Many an oil field man has discovered that here at last is a HEAVY-DUTY PUMPER ENGINE in the lower power range.

NOVO PUMPER ENGINES were especially built for this type of work. They are not made-over, automotive, or intermittent-duty, industrial engines, but real, honest-to-goodness oil field engines, designed by an oil field engineer and incorporating many features suggested by the oil men themselves.

And have they proved successful? Just ask anyone who has been using the new Novo Model CWP Pumper engine, and you'll hear, "There's the power unit that can stand the gaff!"

SEND THE COUPON FOR LITERATURE

Novo Engine Co., 247 Porter St., Lansing, Mich.
Send literature and prices on the Novo Pumper Engines.
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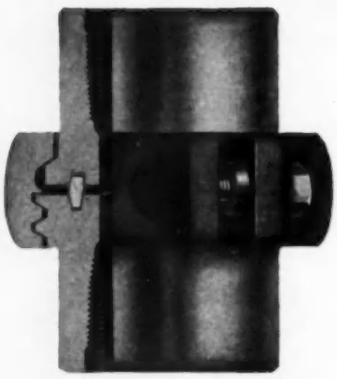

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6,000 lbs. Test

Made in 1½" Size for Blow-out Preventer Hook-Ups and the New Smaller Flow Lines

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NOTES FOR THE Equipment Buyer and User

each consisting of two large-diameter, hardened rollers that contact the driving faces of the kelly and are of a size that absorb torque loads now encountered without corrugating the kelly. The rollers ride on replaceable roller bushings to absorb wear. The bushings, in turn, roll on large-diameter reversible pins.

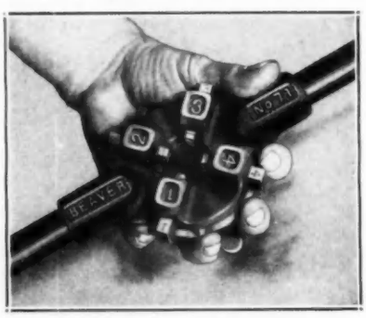
The 6-roller assemblies are adjustable so that all of the 12 rollers are kept in close contact with the kelly faces to prevent rounding the kelly corners. Recesses for the roller assemblies in the drive bushing body and backs of the roller assemblies are tapered. The assemblies seat upon semi-circular flat shims, and adjustment in size of the hexagonal opening to fit the kelly can be made by addition or removal of shims.

Threader

BEAVER PIPE TOOLS

A new threader, Model 71, to handle pipe from ⅛-inch to ¾-inch and bolts from ¼-inch to 1-inch, right or left hand, has been announced by Beaver Pipe Tools, Warren, Ohio.

The tool, which may be used with electric power units or hand-operated, is available in ratchet and non-ratchet models. Die bosses project above the face to permit chips to clear instantly and to prevent curls from soft-steel bolt stock from clogging or jamming the tool. Over 100 sets of dies, which can be changed readily, are available.

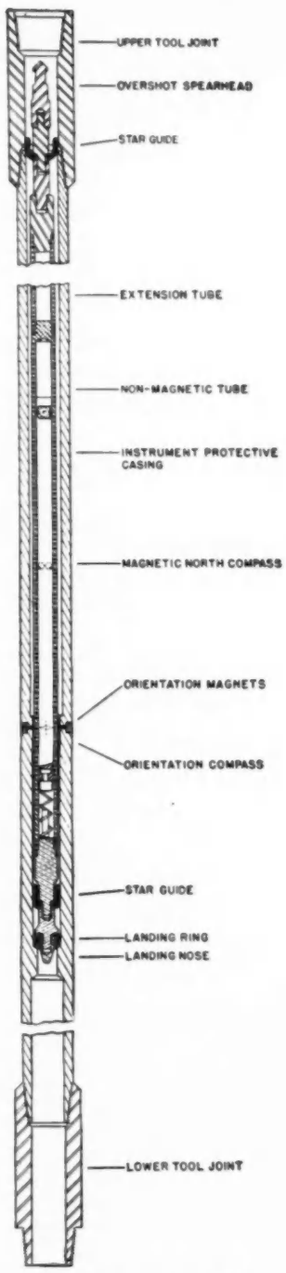


Beaver Model 71 Threader

Tool Orientation

SPERRY-SUN WELL SURVEYING COMPANY

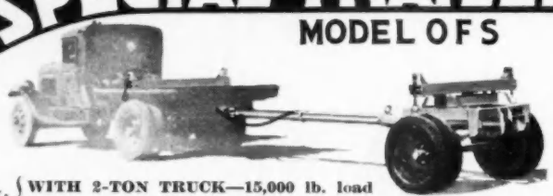
A new method of orienting deflecting tools at the bottom of the hole, providing a photographic check of the position of the tool, has been developed by Sperry-Sun Well Surveying Company, 1608 Walnut Street, Philadelphia. It is being made available to directional drilling contractors and producers under license.



Non-Magnetic Sub

The method employs a non-magnetic

SINGLE AXLE OIL FIELD SPECIAL TRAILER
MODEL OFS



CAPACITY: { WITH 2-TON TRUCK—15,000 lb. load
WITH 5-TON TRUCK—35,000 lb. load

Like all other Hobbs Trailers this model OFS grew up with the Mid-Continent area. Famous for its long, dependable, economical service it is accepted, generally, as a standard for comparison. Illustration is OFS Type for use with truck with platform only.

Refer to pages 1023-1025 Your Composite Catalog.

HOBBS MANUFACTURING COMPANY
FORT WORTH . . SAN ANTONIO . . HOUSTON . . LUBBOCK

NOTES FOR THE Equipment Buyer and User

Sample record (showing magnetic North, as well as direction of deflecting tool section of needle with round circle indicating direction of tool).

sub containing two small magnets and provision for seating a directional magnetic single-shot instrument. The sub is arranged in the drill string assembly immediately above the deflecting tool to be oriented. The relative azimuthal angle between the magnets of the non-magnetic sub and the direction of the tool face is measured prior to lowering the drill string in the same manner as an ordinary bit into the hole. After the tool has reached bottom and prior to setting, a record is taken with a directional single-shot magnetic instrument in which a second compass unit has been temporarily interchanged for the inclination unit. Since the second compass is located directly opposite the magnets in the sub, this record indicates not only the magnetic north, but also the relative position of the deflecting tool to the magnetic north. The drill pipe is then rotated to bring the deflecting tool into the desired position, and another single-shot record is made to check on the final position of the deflecting tool.

In holes which have an inclination of more than three degrees and in which the inclination and the direction of the hole at the point where the deflection is to take place is known from a previous survey, a short magnetic sub, provided with four magnets, and a directional magnetic single shot with one compass and an inclination unit, is used. The record taken inside of the magnetic sub shows the inclination and relative position of the deflecting tool to the direction of the inclination. The direction of the inclination is known from the previous survey, and from it the direction of the deflecting tool can be determined.

The method makes it unnecessary to orient the drill pipe, and the drill string assembly can be lowered as fast as equipment and crew permit. It provides the operator with a photographic check of the position of the tool prior to starting the deflecting work.

Truck

THE MARMON-HERRINGTON COMPANY

A short-coupled, medium weight, all-wheel-drive truck converted from a standard Ford 101-inch wheelbase cab-over-engine model has been announced by The Marmon-Herrington Company, Indianapolis, Indiana.

Designed for semi-trailer work and for general construction and excavation service, the short wheelbase is intended to provide short turning radius, while all-wheel-drive traction is designed for climbing grades and for performance in soft or slippery footing. It is equipped with constant velocity joint steering ends to provide easy, finger-tip steering control under all conditions.

Steam Slush Pump

GARDNER-DENVER COMPANY

New ruggedness in design, an announcement says, is embodied in a new line of 20-inch steam slush pumps announced by Gardner-Denver Company, Quincy, Illinois.

A divided fluid end consisting of two separate cylinder castings, united by the combined suction manifold and cylinder foot at the bottom and by the discharge

It is easy to combine business with pleasure in the New Mexico oil fields. The animals are coyotes, and the hunter is T. J. Buchanan, West Texas and New Mexico representative for McEvoy Company

BREWSTER "CR" RIG

Recommended for drilling 3000', 4500' and 6000'. This complete rig includes pump unit, drawworks unit, quickly erected mast-type derrick and gin pole to raise derrick. Designed so motors may be compounded or used separately. Enables drilling operations to be started 6 hours after equipment has arrived on location. Oilbath transmission. Powered to suit your exact needs.

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OTIS SIDE DOOR CHOKE USES GAS FROM UPPER FORMATION TO PRODUCE LOWER LEVEL . . . .

Gas from an upper formation which has formerly been cased off may be utilized to flow your well by setting a packer in the casing below perforations into the upper gas sand and admitting the gas into the tubing in any desired quantity through the Type G Otis Removable (Side Door) Choke. Write for full information. The Side Door Choke is an "ace in the hole" in more ways than one.

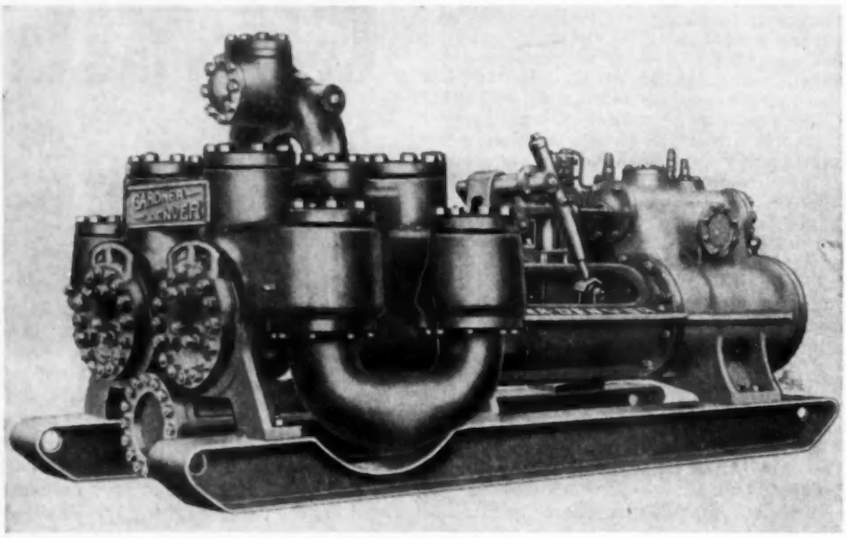
WRITE **OTIS** TODAY

PRESSURE CONTROL

INCORPORATED

DALLAS, TEXAS

NOTES FOR THE Equipment Buyer and User



Gardner-Denver Slush Pump

manifold above the cylinder, are designed for longer life and less upkeep. Walls of the fluid end are exposed for inspection, and there are no inner baffles or metal sections between the two sides of the fluid end to be cut through by mud.

Steam valves are of the balanced piston type and the pump is regularly fitted with mechanical force-feed type lubricator having diaphragm-type check valves, designed for ample lubrication and longer life to the valve gear, steam cylinder walls and piston rings. Rocker arms are of the telescopic lever type.

A new iron alloy, termed Gardurloy, is used in construction of the pumps. The alloy is described as having a dense close-grained structure of uniform hardness, providing tensile strength comparable to the better grades of cast steel and greater resistance to erosive action of slush.

Hoist

American Hoist & Derrick Company, St. Paul, Minnesota, has issued Bulletin No. 100-H-O describing its Model 20 general purpose hoist. The unit completes a line that also includes Models 35, 50, 75 and 100. Model 20 is available for either electric or gasoline power, with electric styles offered in 7½- and 15-horsepower sizes, and gasoline units available in from 1- to 4-cylinder and from 7- to 21-horsepower sizes.

Gate Valves

Henry Vogt Machine Company, Tenth and Ormsby streets, Louisville, Kentucky, has issued a new bulletin describing its drop-forged-steel gate valves. Illustrations show various types available and specifications are given.

Slim Hole Equipment

Franks Machine Company, 203 East Maine Street, Enid, Oklahoma, has announced a new catalog on slim hole equipment. Specifications on portable drilling rigs are given.

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Know Their Rope Dope!

Our salesmen—available through our distributors—are *trained* to analyze your rope problem efficiently. Our Engineering Staff is ready to use these analyses for recommendations for "ultimate low cost." Wire, write or consult your Telephone Directory.

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2104 Manchester Ave. Kansas City, Mo.

UNION
Wire Ropes
"The ULTIMATE LOW COST WIRE ROPE"

A

The one wrench that Guarantees
"No Housing Repair Expense"
If this Housing ever Breaks or Distorts we will replace it Free.
THE RIDGE TOOL CO.
ELYRIA, O.

RIDGID—the name on millions of wrenches that stay on the job. A housing that's a sort of miracle of design and alloy-metal because it won't warp or break. No "out for repairs," no repair expense, fewer "spares" needed. That remarkable housing assures you also an adjusting nut that always spins freely to size, never binds. Safe chrome-molybdenum jaws, replaceable, handy pipe-scale on hookjaw. The wrench that costs practically nothing for upkeep, outstandingly popular with men who know fine tools. Ask your Supply House . . . today!

THE RIDGE TOOL COMPANY
ELYRIA, OHIO

RIDGID PIPE TOOLS

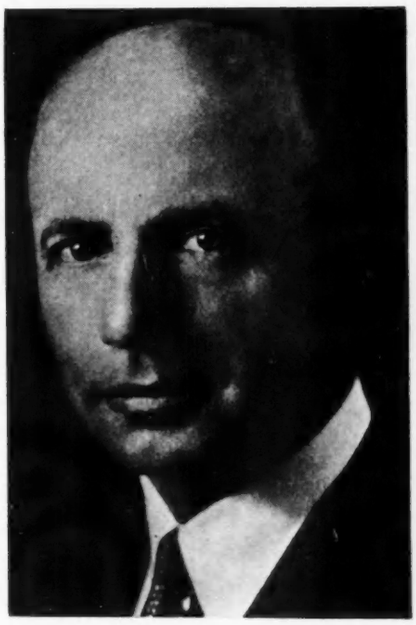
NOTES FOR THE Equipment Buyer and User

A. E. Walker Elected President of The National Supply Company

A. E. Walker was elected President of The National Supply Company on April 3, 1940.

A native of Detroit, Walker received his engineering education at the University of Michigan, graduating in 1910. For 21 years he was connected with Republic Steel Corporation and its predecessor, Republic Iron and Steel Company, serving as general manager of sales from 1928 to 1936, and was also president of Truscon Steel Company. From January, 1937, to April, 1939, he served as executive vice president of Pittsburgh Steel Company.

On April 1, 1939, Walker was elected vice president and director of The National Supply Company, as well as president of Spang Chalfant, Inc.



A. E. WALKER
Named President of The National Supply Company

C. J. Harter Establishes Machinery Agency in Houston

C. J. Harter, former vice president of the D. S. Mair Machinery Corporation, has established C. J. Harter, Machinery, at 4000 Clay Avenue, Houston. The new firm will represent the same lines formerly handled by D. S. Mair Machinery Corporation, which is no longer operating as an active sales organization due to the recent death of D. S. Mair.

C. J. HARTER
Establishes C. J. Harter, Machinery

Duff-Norton Announces Personnel Changes

The Duff-Norton Manufacturing Company, Pittsburgh, makers of lifting jacks, has announced appointment of Earl E. Thulin as vice-president and general manager of sales, effective April 1, 1940. He will maintain his office in the Peoples Gas Building, Chicago, and later in the year will be located at the general offices of the company at Pittsburgh.

C. N. Thulin continues in Chicago as vice president and will act in a sales executive capacity as a special representative in all territories.

W. I. Floyd has been appointed assistant general manager of sales in addition to his present duties as assistant to the president. His headquarters at the general offices of the company in Pittsburgh.

Timken Roller Bearing Advances Hills, Cornell and Roberts

Yale D. Hills has been appointed assistant general manager of the service-sales division of The Timken Roller Bearing Company, Canton, Ohio. He came with the company in 1919 and has filled various positions in the general office and in the field. For the past nine years he has held managerial posi-

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STANDCO BRAKE LINING
Is the driller's best friend because it makes the easiest brake known and "feeds off" evenly while drilling. It never scores brake rims. See Page 2100 Composite Catalog.
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TRY THIS TEST . . . AT OUR EXPENSE!
RECTORSEAL, applied to a badly worn threaded connection and allowed to set up, held 2,700 pounds of water pressure and 2,700 pounds of kerosene pressure when made up hand tight . . . 4,800 pounds of water pressure and 4,300 pounds of kerosene pressure when made up with a 24" wrench. After the test, joints broke out readily . . . proof of no cementing action. We will gladly furnish free RECTORSEAL sample, upon request, for you to make this test against any other product on the market. Write Rector Well Equipment Co., Inc., Ft. Worth, Texas.
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THE POSITIVE LEAK PREVENTER

TIN END ENVELOPES
for Sand Samples
Made of strong kraft paper, tightly sealed to eliminate leaks. Top end folds over with easy twist and holds contents securely. Most economical for sending and filing of sand samples. Phone, write or wire for our low prices.
GULF ENVELOPE CO.
617 BROOKS Fx. 4171
HOUSTON, TEXAS

tions on the West Coast, recently returning to the general office as supervisor of distributors.

J. F. Cornell, branch manager of the service-sales division at Minneapolis, has been named special representative of the company with headquarters at Canton. He has been replaced by J. P. Roberts, who has been connected with the Pittsburgh office as a salesman.

Centrifugal Pumps

Worthington Pump & Machinery Corporation, Harrison, New Jersey, has issued a 4-page bulletin, designated W-341-B7, on its Type HL, vertically-split, single-stage volute centrifugal pumps. It lists features of the unit as including end-suction impeller with large entrance areas designed for pumping volatile liquids; accessible, extra-deep stuffing box; hardened stainless steel shaft sleeve; rigid cantilever-type shaft to prevent shaft deflection in the stuffing box, and heavy-duty, oil-lubricated ball bearings with a constant-level oiler. The bulletin gives detailed specifications on the 9 sizes in which the unit is available.

Steam Engine Lubrication

Shell Oil Company, 100 Bush Street, San Francisco, has published "The Fundamentals of Steam Engine Lubrication." It gives, in 32 pages, the principles of steam-engine lubrication in terms the average man can understand and appreciate. The bulletin is issued as No. 6 of Vol. 1 on the Panorama of Lubrication.

Thompson Named Texas Tubular Manager for National Supply

The National Supply Company has announced appointment of James M. Thompson as tubular manager for its Texas division, with headquarters in Fort Worth.

JAMES M. THOMPSON
Texas Tubular Manager for The National Supply Company

A native of Texas and a 1919 graduate of Virginia Military Institute, Thompson was affiliated with the building industry in Fort Worth until 1934 when he joined Norvell Wilder Supply Company. In this connection, he worked out of Fort Worth, in East, West and North Texas until August, 1939, when he was transferred to the company's Tulsa office.

Supply Personals

Members of the Tulsa Purchasing Agents Association were guests April 9 of Hughes Tool Company. The evening's entertainment included motion pictures showing manufacture of rock bits and of the last Sugar Bowl football game between Tulane University and A. & M. College of Texas.

H. I. Beardsley, head of the gasoline and oil meter department of Pittsburgh Equitable Meter Company, Pittsburgh, was a Tulsa visitor last week.

Cleveland Tramrail Erie Company, distributor in the Erie, Pennsylvania, area for Cleveland Tramrail, has moved to 1731 Oxford Street, Erie. H. M. Nelson is manager of the office.

A. Whiton Vennema, 53, mechanical superintendent for The Manhattan Rubber Manufacturing Division of Raybestos-Manhattan, Inc., Passaic, New Jersey, died March 23.

It's a Fact — Johnston

3,000,000 BARRELS OF OIL WERE CONSUMED, AND 2,000,000 TONS OF EARTH WERE BLOWN FROM THE GROUND IN ONE OF THE BIGGEST OIL WELL BLOWOUTS IN THE HISTORY OF THE INDUSTRY. IN MEXICO, IN 1908, A HEAVY GAS AND OIL STRUCTURE WAS TAPPED AT 1834 FEET. IMMEDIATELY BLOWING IN. SO GREAT WAS THE SUDDEN RELEASE OF PRESSURE THAT THE EARTH QUAKED, OPENING FISSURES IN THE GROUND FOR 250 FEET AROUND THE RIG. THE BOILER FIRES IGNITED THE GAS ESCAPING FROM THE WELL AND FISSURES, CREATING A SOLID MASS OF FLAMES THAT BURNED FOR 58 DAYS. THE FLAMES REACHED A HEIGHT OF 1500 FEET AND A DIAMETER OF 500 FEET...SO BRIGHT A FIRE THAT AT NIGHT A NEWSPAPER COULD BE READ BY IT 11 MILES AWAY!

THAT WAS 32 YEARS AGO. TODAY, WITH THE JOHNSTON FORMATION TESTER, OPERATORS ARE ABLE TO GET A FIRST-HAND KNOWLEDGE OF FORMATION CONDITIONS THAT ENDANGER THEIR COSTLY WELL INVESTMENTS. THE JOHNSTON TESTER TELLS QUICKLY AND ACCURATELY, BEFORE CASING IS SET, EXACTLY WHAT EVERY LIKELY SAND ENCOUNTERED WILL PRODUCE. IT ENABLES OPERATORS TO PASS UP UNPRODUCTIVE ZONES AND CONCENTRATE ON THOSE THEY KNOW WILL BE PROFITABLE PRODUCERS. THEY SAVE MONEY BY USING THIS TOOL—AND GET BETTER WELLS WHILE DOING IT! WHY DON'T YOU?

WRITE FOR JOHNSTON ENGINEERING BROCHURE 34-A. IT'S COMPLETELY ILLUSTRATED AND WILL GIVE YOU ALL THE FACTS ABOUT JOHNSTON TESTING METHODS AND EQUIPMENT. NO OBLIGATION AT ALL.

Johnston

FIVE DOLLARS ($5.00) WILL BE PAID FOR EACH INTERESTING OR UNUSUAL FACT CONCERNING THE PETROLEUM INDUSTRY (EITHER IN THE UNITED STATES OR ABROAD) WHICH IS USED IN THIS SERIES OF JOHNSTON ADVERTISEMENTS. SUBSTANTIAL PROOF MUST ACCOMPANY EACH CONTRIBUTION. WHEN TWO OR MORE SIMILAR FACTS ARE SENT IN, THE AWARD WILL BE GIVEN TO THE FIRST ONE RECEIVED ...

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LOS ANGELES, CALIFORNIA
Bakersfield 2794 Ventura 5621

FORMATION AND CASING TESTING — JOHNSTON

JOHNSTON
Oil Field Service Corp.
5702 NAVIGATION BLVD.
HOUSTON, TEXAS

"WHY SET CASING BEFORE YOU KNOW!"

Squeaks from the Bull Wheel

What Else But?

"Got any prospects?"

"Well, I'm waiting for something to turn up."

"Ah—somebody's toes?"

Parson's Troubles

"What is your name, my little man?"

"Well, if that isn't the limit. Why, you christened me."

A Sure Cure

"Well, my man, what's the matter with you?"

"Pain in the back, sir."

"Take one of these pills a quarter of an hour before you feel the pain coming on."

Don't Swat These Flies!

A clothing dealer had to go downtown to see about his insurance, and he left the shop in charge of his son Joey.

"You understand the price marks, Joey?" he said. "Five dots for $25, six dots for $30, and so forth."

"Sure, father, sure," said Joey.

When the man got back his son Joey said:

"I had pretty good luck, Father. I sold three pairs of $5 pants and six of them $55 suits."

"But look here, Joey, we ain't got no $55 suits. Our $35 suits is the highest."

"Then the marks is wrong, father."

The clothing dealer lifted his eyes and hands solemnly heavenward.

"Joey," he said, "God bless the flies."

Verse

They were discussing a silver butter dish which they planned to send to some newlyweds. What should they put on the card accompanying the gift?

"Anything you like," suggested the husband.

So the wife thought a while, and then wrote: "For butter—or worse."

Or a Packing Box

"No, Elmer, I can't marry you. The man whom I'm going to marry must be upright and square."

"You don't want a husband—you want a piano."

Firm Grip

Barber—What's the matter; ain't the razor takin' holt?

Victim—Yeah, it's taking holt all right, but it ain't letting go again.

Easily Remedied

"I'm sorry I haven't a dime," said the lady as she handed the conductor a ten-dollar bill.

"Don't worry, madam," he replied politely. "You're going to have 99 of them in a couple of minutes."

Closely Watched

I do wish I could think of some way to make the members of the congregation pay attention to me when I'm preaching.

Why don't you put the clock right behind the pulpit?

Higher Rank

I have a Sargent painting in my home.

That's nothing. I have a general housecleaning in mine.

Romance

"Your daughter has perhaps told you what she means to me. I told her yesterday that she is the joy of my days, the dream of my nights."

"Well, she did say something about it, but not quite like that. She just said that she had clicked."

At Sea

Passenger—Tell me, sir, are you the mate?

Irish Cook—Sure and I'm not; I'm the man that cooks the mate.

Impressed

A boy had been taken to see the marvelous spectacle of the Grand Canyon in Arizona, and had been told, among other things, that it was a mile straight down to where the mighty Colorado River flowed.

That night he wrote one sentence in his diary: "I spit a mile."

Color Blind

"This liquid turns blue if your unknown is basic, and it turns red if unknown is acid."

"Sorry, but I'm color blind," apologized the student. "Have you got anything with a bell on it?"

One Track Mind

Elmer, I wish you wouldn't whistle at your work.

I wasn't working.

Hardened

Your son is making good progress with his violin. He is beginning to play quite well.

Do you really think so? We were so afraid that we merely had got used to it.

No Need For It

Mrs. Newed entered the dining room and proudly placed the turkey on the table.

"There you are, my dear, my first turkey."

"Wonderful, darling, and how beautifully you have stuffed it."

"Stuffed? But, my dear, this one wasn't hollow."

Alcohol Rub for Panes

Lady to Window-cleaner: Will you have a cup of tea or a glass of beer?

Window-cleaner: Beer's best, mam. I find it gives a better polish when I breathes on the glass.

Lost Motion

My eldest sister had her face lifted.

How does it look?

Oh, it fell again as soon as she received the bill.

Specific

Now if you'll give me a general idea of the type of house you need—

Well, I have to have something to go with a door-knocker that my wife bought in New England.

Faux Pas

There's no need to worry about your wife. You'll have a different woman when she gets back from the hospital.

And what if she finds out?

Slight Loss

"I always eat in this restaurant. You know, in lots of restaurants the waiters grab the plates away from you before you have finished."

"And they don't do that here?"

"Oh, yes they do, but here you don't mind it so much."

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WATER CANS
& COOLERS
GOTT Water Coolers are the convenient way to keep drinking water handy to the worker, protect it from impurities. Their exclusive construction keeps water cool for long periods. Snug fitting large removable top, handy non-leaking push button faucet. GOTT Water Cans for handy field use. Your Supply Store has them, get one today! . . . .
GOTT WATER COOLER
Made in 3, 5, 8, 10, and 20 gallon sizes.
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Made in 1½, 3, 5, and 10 gallon sizes.
H. P. GOTT MFG. CO.
WINFIELD, KANSAS
KEEP PURE DRINKING WATER ALWAYS HANDY

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